

Government Committee Reports on Refrigeration

Report Touches on Best Features of Mechanical Refrigerating Units

(Concluded from Page 4, Column 5)

lain bottom in an enamel lining increases its length of life and efficiency.

Galvanized iron linings are practically obsolete and should be. Since lining should not absorb either odors or moisture, wood is obviously ruled out.

The exterior covering should be smooth and easily cleaned, should maintain original finish, and be water resistant. Experience of the past indicates that in climates where high temperature and humidity prevail, lacquered or enameled metal sheathing may deteriorate quickly and require refinishing or they may stay in good condition for several years.

Porcelain Preference

The preference at present is for porcelain exteriors. A number of promising new materials are being developed. The trend has been toward metal sheathing which is still in experimental stage. The above requirement should apply whether sheathing is of wood or steel.

Doors should fit tightly against gaskets held with pressure latches that hold securely. The better grade cabinets carry two gaskets per door. There should be a bearing surface of at least one-half inch around each door.

Wide Bearing Surface

A wider bearing surface is preferable. Doors should carry the same amount of insulation as the rest of the wall.

The hinges should be sufficiently strong to withstand the pressure. All hardware should be of good quality and non-rusting.

Shelves should be non-tarnishable, and permit easy air movement, strong and easily cleaned. Sliding shelves are desirable for deep boxes. For stationary shelves hooks are better than grooves. Shelf spacing should provide for the foods logically stored in each.

Top Shelf High

The shelf in the coldest portion of the height of the small food compartment should be at least 10 in. high to accommodate milk bottles. Too great a

distance between shelves lowers economy of use.

Durability is important in determining cost and efficiency of operation, not only in decreasing the depreciation charge, but also the upkeep. If breathing spaces are left in the walls and the insulation slips or absorbs, moisture efficiency is lowered.

Mechanical Refrigeration

Much of the discussion of mechanical refrigeration consists of well-known facts, almost axioms in the industry, but they aid in showing the inclusiveness of the report:

Mechanical units operate on the principle that certain substances known as refrigerants, such as sulphur dioxide and ammonia, absorb heat by vaporizing—changing from a liquid to a gas—at a low temperature.

By forcing the refrigerant to vaporize inside the chamber to be cooled and then changing it back to a liquid outside of that chamber, forcing it to flow back to vaporize again, continuous refrigeration is possible.

During the past five years there has been considerable activity in the development of mechanical units to provide refrigeration. The earlier units were, many of them, installed in existing cabinets.

Importance of Cabinet

The industry soon recognized that the service of its unit was largely controlled by the cabinet and in practically all jobs now intended for home installation, the units are self-contained in cabinets tested by the manufacturers and the units are installed and tested before leaving the factory.

These units are of two general types, the compression type and the absorption type. In the compression type machine the refrigerant is put under pressure in a mechanical compressor run by a motor.

This liquid under pressure is then car-

ried by a pipe to a freezing unit inside the refrigerator where the pressure is reduced by a valve. As the liquid refrigerant passes through the valve, it vaporizes and takes up heat in so doing, and as a result of this, cools the box.

The refrigerant, which is now in the form of a gas, is returned to the compressor through another pipe and the operation repeated. Household units of this type are described by John T. Bowen as follows:

Domestic Units

"The small domestic refrigerating plant includes all the elements of the larger plant, but is designed for automatic operation throughout, except an occasional oiling, and the number of wearing surfaces requiring lubrication are reduced to a minimum.

The expansion valve is designed to function automatically, and the starting and stopping of the machine is accomplished automatically by means of a suitable thermostat which cuts on and off the electric current to the motor as the temperature in the refrigerator rises and falls. This latter feature has given rise to the name "Electric Refrigeration," and by many it is believed that electricity, in some mysterious way, is directly responsible for the refrigerating, or cooling effect, produced.

Electricity Motive Power

As a matter of fact, electricity is only the motive power generally employed for compressing the refrigerating gas or vapor. Other sources of power might be employed, such as the gas engine, steam engine, etc.

The employment of electricity does, however, offer great advantages over any other source of power, owing to cleanliness, economy in space, economy in power, better arrangement of machinery, automatic control easily and reliably obtained, less noise and easier installation and maintenance.

"The production of a successful automatic household refrigerating plant has been dependent upon the satisfactory design of three vital elements; namely, the expansion valve, the stuffing box, and a suitable means of providing lubrication. These points should be carefully considered by the prospective purchaser."

There are two popular sizes of machines on the market requiring $\frac{1}{4}$ to $\frac{1}{2}$ hp. motor, respectively. The monthly current consumption for operating, based on the smaller size, which requires a $\frac{1}{4}$ -hp. motor, consuming about 300 watts per hour, assuming that the machine is operated eight hours per day for 30 days, is:

$$300 \times 8 \times 30 = 72 \text{ Kilowatt hours} \\ 1000$$

Operating Cost

Multiplying this by the cost per kilowatt hour, the monthly cost of current is:

Rate per K. W. hr.	Monthly Cost of Operation
\$0.03	\$2.16
0.0325	2.34
0.04	2.88
0.05	3.60
0.06	4.32
0.07	5.04
0.08	5.76
0.09	6.48
0.10	7.20

A prospective purchaser can ascertain from the power company the cost per kilowatt hour of electric energy and from the above table estimate the cost of power for operating a household machine.

The machine should be located in a clean, dry, and cool place where an ample flow of cool air can be maintained over the machine and condenser. A warm kitchen is a poor place for locating the machine and should be avoided if possible.

Hours of Operation

The number of hours that a machine will be in operation during each 24 is governed by the size and condition of the refrigerator, the room temperature, and the number of times the refrigerator is opened. Average conditions may be assumed to require about eight hours' operation in 24.

Assuming:

- 6 per cent interest on the money invested.
- 10 per cent depreciation.
- 4 per cent repairs, maintenance, taxes, insurance, etc.

20 per cent total.

Then if the outfit cost \$250, there will be an annual charge of \$50 or \$4.17 per month in addition to the current consumption.

Absorption Type

The absorption type unit makes use of a small boiler to vaporize and thereby raise the pressure of the refrigerant so that it can be changed back to a liquid at ordinary temperature. The major steps in the cycle of such a refrigerator are as follows:

A solution of the refrigerant (usually ammonia in water) is placed in the boiler and heat applied. The refrigerant is driven out of the solvent as a gas

under pressure and is then condensed to a liquid. This liquid flows to the freezing unit and is vaporized, taking up heat and cooling the box. The refrigerant, now in the form of the gas, is absorbed again in the solvent and flows back to the boiler.

The condenser in this type of refrigerator is water cooled. These boxes must be so located as to have a continuous flow of water. In hot weather as much as 200 gallons of water may be required per day for an ordinary household size. There must be a source of heat, the most usual being gas, though refrigerators of this type are on the market which are heated by electricity, bottled gas or kerosene.

Selection

In selecting a mechanical refrigerator the committee recommends that the reliability of the manufacturer is the most important point; second is the selection of the unit for which local servicing of a reliable character is available.

Since it is extremely difficult for the layman to judge the technical points of a refrigerating machine, his best criterion is the reliability of the manufacturer and agent. Several manufacturers have been making and selling electric refrigerators for a number of years and their machines have proved commercially satisfactory. In buying a machine the purchaser should inquire how long the manufacturer has been in business, how many machines of the model under consideration have been sold, how long they have been in use, and how many are in use in the immediate vicinity or city; and he should examine into the facilities available for emergency service and maintenance work in case the machine needs attention. Sometimes the reliability and business integrity of the local selling agent, his ability to render prompt service when needed—for example, on Sundays and holidays, as well as week days—will be of first importance in making a selection. The older, better-known machines are about on a par and of equal merit.

In the case of newer machines which have not been on the market long enough to meet the test of them, the manufacturer should be of such financial strength and business integrity as to leave no doubt of his ability to make good in marketing a new device.

It is also recommended that the customer observe a refrigerator cabinet of the same type during operation, and get from the dealer a statement as to temperature maintained and cost in power for operation under test conditions.

Durability

Fully as important as the first cost and the cost of operation is the relative durability of the electric refrigerator. However, this is a matter most difficult of determination. It is possible to make judgments based upon life tests of the mechanical units and upon the cabinets under various adverse conditions, but there are no comprehensive data of this kind generally available.

Here as in many other cases, time is the great testing engineer, but it is always possible that ways can be found in answer to a demand, to provide reliable information on durability.

Location of Refrigerator

The function of the household refrigerator is to serve as a safe and convenient storage for foods to be used in the preparation of meals. The obvious place for the refrigerator is near the center that is used in the preparation of food. If there is a pantry or store room, and it is conveniently located with reference to the food preparation center in the kitchen, this is the ideal place.

But the floor plan of many houses does not provide a conveniently located pantry or entry for the refrigerator and the housewife may prefer it in the kitchen. Obviously, more ice will be consumed, more gas and electricity will be used in a room where the temperature in the region of the refrigerator varies between 70° and 90° than in one with a temperature less than 70°.

If the motor of the mechanical cabinet is a part of the construction and is air cooled, the cabinet should be located so as to provide adequate air circulation or the cost of operation will be increased. If the motor is separate, it is frequently desirable to install it in the basement. These cabinets may or may not be provided with a drain. The absorption type must be installed with access to both water and gas or other source of heat.

Defrosting

At frequent intervals it is necessary to remove the frost that collects on the freezing unit of the mechanical refrigerator, from the moisture in the air of the refrigerator; some from the air entering the refrigerator, some from the food stored there. As the air in the cabinet circulates, it comes in contact with the coils containing the refrigerant.

The air is thus chilled, the moisture it contains is condensed and is deposited on the coils. Ice is a poor conductor,

hence it is necessary to remove it, if the mechanism is to function properly. It is impossible to say definitely how often any one refrigerator should be defrosted. It will depend upon such factors as the relative humidity of the air, the amount and kind of food stored in the refrigerator, and the percentage of time which the motor operates.

Placement of Food

Food should not be kept in the compartment reserved for the refrigerating unit or for ice, since it interferes with the circulation of air. However, one model of a gas-fired refrigerator on the market is so designed that there is adequate space in front of the cooling unit to accommodate the milk and cream bottles.

Each refrigerator should be studied, the position of the down drop for cold air and the exit for warm air from the food storage compartment should be located. Presumably the coolest spot available for food storage is the shelf directly under the ice compartment or cooling unit. If there is any question, the shelf where the lowest temperature prevails can be located with a thermometer. Provided it is high enough to accommodate the bottles, this shelf should be reserved for milk and cream.

Use of Cooling Spot

If there is room, this is the best shelf, too, on which to store butter, fresh meat, meat broths, cream soups, and left-over cooked cereal. The next coolest shelf should be reserved for uncooked meats, left-overs, fats used in cooking, and table oils. In the "side icer" style of cabinet this presumably will be the bottom of the refrigerator. Eggs and mild flavored fresh fruits and vegetables may be placed on the next shelf.

The upper shelf in the side icer cabinets will be reserved for strongly flavored foods such as bananas, cheese, and cantaloupe. Then if any odors are given off, they will be deposited on the film of water surrounding the ice and will be carried down the drain or deposited with the frost on the freezing unit.

There is less variation in the temperature on the various shelves of the "top icer" than in the "side icer" style of cabinet. But presumably the coolest space in the food storage compartment will be the top shelf, directly under the ice or cooling unit.

Milk, Cream Placement

If the down drop for cold air is in the center, the middle section of the top shelf will be the place for milk and cream. Unfortunately the space between the top shelf and the ceiling of the food compartment is frequently so low that only a half-pint bottle can stand there, and the milk must be placed on the floor of the cabinet, the shelf that is farthest from the refrigerator.

However, there is less variation in the temperature on the various shelves of the "top icer" type of cabinet than in the "side icer." If there is room, the top shelf is the place for butter, meat broths, and uncooked meats. Left-over cooked foods and custards may be stored on the second shelf and fresh fruits and vegetables on the third shelf.

The warmest shelf will be the floor of the refrigerator. If the ducts through which the warm air is returned to the ice compartment or cooling unit are located at either side, the outer edge of the floor will be the place for the strongly flavored foods.

Special Containers

It is possible to purchase special containers for refrigerator use. They are obtainable in either glass or enamel ware. These containers are either rectangular or round in shape and have straight sides so take up a minimum of room. Frequently they come in sets of two or three with a cover for the top receptacle only.

If glass is used, it is possible without removing the dish to see the kind and amount of food it contains. Some of these containers are so designed that they may be put directly on the dining table. This is particularly desirable for such foods as custards and chilled fruits.

Many people use glass fruit jars for storing food in the refrigerator. They require a minimum amount of shelf space, and if there is sufficient room between the shelves, they make very satisfactory containers for such foods as soup stocks, gravies, salad dressings, some cooked vegetables and fruits. Drinking water for table use may be kept in a covered jar in the refrigerator.

Avoid Overloading

For the successful operation of a refrigerator, air circulation apparently is essential. In order to have air circulation, there must be a passage way for the air. If the shelves are so crowded that the passage ways are all closed, circulation will be interfered with, the heated air cannot escape, and the temperature of the food storage compartment will go up.

It is especially important that the outlet for cold air from the ice compartment and the inlet for the return of warm air to the ice compartment shall not be obstructed.

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The business newspaper of the refrigeration industry

ISSUED EVERY WEEK
VOL. 6, No. 15, SERIAL No. 143

Copyright, 1931, by
Business News Pub. Co.

DETROIT, MICHIGAN, DECEMBER 16, 1931

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.

TEN CENTS PER COPY
TWO DOLLARS PER YEAR

GLATT APPOINTED SALES MANAGER FOR KING KOLD

Ramclow to Supervise
Engineering; Other
Changes Made

CHICAGO—Edward E. Glatt has been chosen general manager in charge of sales for the Illinois Moulding Co., makers of King Kold electric refrigerators. He replaces S. J. Molner, who has resigned to enter business for himself.

Mr. Glatt has appointed M. Friedman, who was purchasing agent for the picture frame division of the company for the last six years, as purchasing agent for the refrigeration division.

A recent addition to the company's personnel is that of Axel Ramclow, former chief engineer for the Zerozone Corp., who now has charge of the designing and engineering of the King Kold refrigerator.

L. J. Horan has been signed again as direct factory representative for King Kold in Missouri, Kansas, Indiana, and southern Illinois. E. C. Merrill was appointed direct factory representative for western Wisconsin, Minnesota, North Dakota, and South Dakota, effective Dec. 8.

Mr. Glatt has just returned to Chicago from St. Louis, where he visited the E. J. Straus Radio Co., distributor in that territory.

E. E. McMULLEN, NORGE VICE PRESIDENT, DIES

ST. LOUIS—E. E. McMullen, president of the Norge Co. of Missouri and vice president of Norge Corp., Detroit, died suddenly of apoplexy Dec. 3 at his home. He was Norge's oldest distributor in point of service.

It was Mr. McMullen who first discovered the inventor of the rotary type compressor, which mechanism he brought to the attention of Howard E. Blood, president of Norge Corp., who developed and perfected it. Mr. McMullen even selected the name "Norge."

The first manufactured lot of approximately 100 Norge machines were placed in homes of Mr. McMullen's friends in St. Louis and Mr. Blood's friends in Detroit.

He became interested in electric refrigeration about eight years ago. After becoming associated with Mr. Blood in the Norge Corp., he was made St. Louis distributor. His organization there now includes a force of about 100 persons. It will continue under the management of S. A. Crowe.

Just recently he completed the building of a suite of offices for directing Norge distribution.

Mr. McMullen was also president of the McMullen Printing Co., president of the Refrigeration Products Co. of Detroit, and a director of the Southwest Bank here. He was 46 years of age, and survived by Mrs. McMullen, a sister, and his mother.

DR. ALLISON MAKES TOUR OF MIDDLE WEST BUREAUS

NEW YORK—Dr. G. W. Allison, field manager of the Electric Refrigeration Bureau, is now making a tour of the Middle West on business for the bureau. Last week his travels took him through Decatur, Champaign, Peoria, Springfield, and Quincy, Ill., where he spoke to local dealers on cooperative marketing of electric refrigerators.

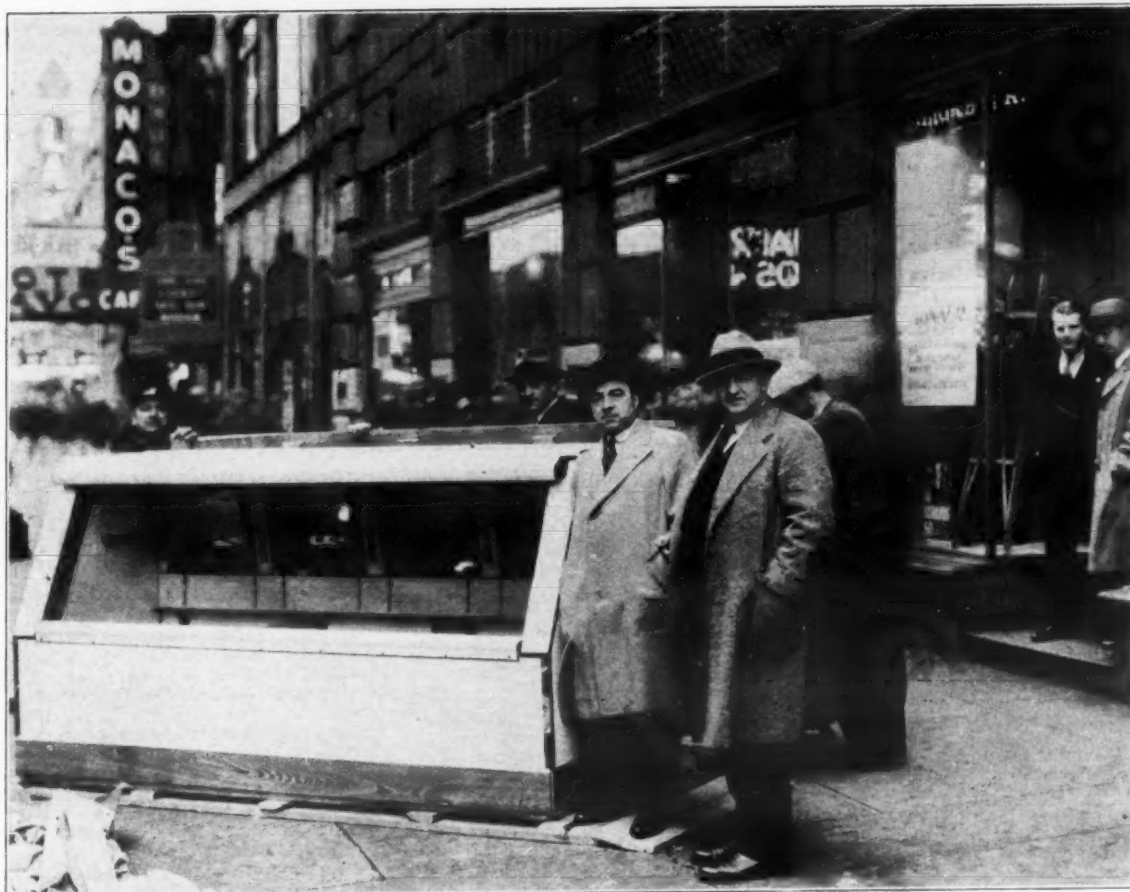
This week he is addressing daily luncheon meetings sponsored by the Consumers Power Co. at Muskegon, Grand Rapids, Kalamazoo, Battle Creek, and Jackson, Mich.

Four of the cities in these two groups Peoria, Springfield, Kalamazoo, and Battle Creek—already have Electric Refrigeration Bureaus.

**FRIGIDAIRE BRANCH SALES
SHOW 117% GAIN**

BOSTON—H. W. Newell, manager of the Frigidaire Sales Corp. of New England, reports a 117 per cent increase in sales last month over November of 1930.

First Installation of G. E. Display Case



The display case shown above was recently installed by the Cushman Refrigeration Co. in Monaco's Cafe, in the Hanna Bldg., Cleveland. According to H. N. Trumbull, Cushman advertising and sales promotion manager, this is the first installation of a G. E. display case. The condensing unit is in the basement. In foreground are Frank Monaco, proprietor of the cafe, and R. M. Sausaman, Cushman's commercial sales manager.

CASWELL TO HANDLE G. E. EDISON RANGES

DETROIT—Caswell, Inc., Michigan distributor for General Electric refrigerators, will undertake the distribution of General Electric Hotpoint ranges in the state of Michigan, according to S. C. Caswell, president.

Jean Cross, who has been wholesale representative for Hotpoint ranges in the Michigan territory, is to become manager of the new electric range division of Caswell, Inc., according to Mr. Caswell.

Present plans call for distribution of General Electric Hotpoint ranges through the three Caswell retail stores, through central stations and dealers. General Electric refrigerator salesmen now working under the Caswell banner will probably get a chance to sell Hotpoint ranges, according to Mr. Caswell.

Maxon Has Account

DETROIT—Maxon, Inc., will handle the advertising for the General Electric Hotpoint ranges, according to announcements made at the central offices of the agency.

The account will be handled out of the Cleveland office of the advertising concern. An intensive program of advertising, in which nationally known periodicals will carry ads for Hotpoint ranges, will be opened shortly after Jan. 1.

DOMESTIC INDUSTRIES, INC. BRINGS OUT 2 NEW UNITS

MANSFIELD, Ohio—Domestic Industries, Inc., manufacturer of furniture, have brought out two new electric refrigerators under the trade name of "Buckeye." They will be sold direct to dealers, according to William Switzer, president.

One is a 5.47-cu. ft. box to retail at \$99.50, and the other a 7.18-cu. ft. model, retailing at \$159.50. Both boxes are finished in white lacquer, and trimmed with heavy chromium plated hardware.

The Cleveland Plain Dealer reported on Dec. 5 that Domestic Industries, Inc., had awarded a contract for building 35,000 to 100,000 boxes to the D. A. Ebinger Sanitary Mfg. Co. of Columbus.

The same clipping reports that the mechanical part of the refrigerators will be manufactured at Dayton, where advertising offices will be maintained.

November Sales of Norge Gain 212%

DETROIT—For the eleventh consecutive month the sales of Norge Corp. have shown an increase over the corresponding month for 1930, according to President Howard E. Blood.

"Our sales for November were 212 per cent of the volume for November last year, while the sales for 1931 to date total 462 per cent, as compared with the corresponding period a year ago," Mr. Blood reports.

NEW PLAN OFFERED ZEROZONE CREDITORS

CHICAGO—Acting on the suggestion of the Straus National Bank & Trust Co., as receiver for Zerozone Corp., the creditors' committee has just recommended in a letter to all the creditors of the corporation, that they accept the proposition made by A. H. Richland of New York, before a creditors' meeting last Thursday in Chicago.

In the Chicago meeting, Vice President Hickok of the Straus bank announced that the cash on hand had been increased from less than \$1,000 on Feb. 4 when the receivership was formed, to \$36,500 at the present time.

Practically the entire output of the factory during this period went to the Zerozone Products Corp., the New York firm organized by Mr. Richland to merge.

94% of Quota Sold By Vermont Bureau

MONTPELIER, Vt.—Over 94 per cent of its N. E. L. A. quota had been safely stowed away by the Vermont Electric Refrigeration Bureau members on Dec. 5. The goal, according to State Director Buttrick, will probably be passed before the end of the Christmas selling campaign.

Leading local bureaus on Dec. 5 were Barre, with 142.6 per cent; Bennington, with 142.2 per cent, and Montpelier, with 131.3 per cent.

The Barre-Bennington race has been close for months. Bennington had been in the lead for some time, however, until the Dec. 5 count was made.

R. COOPER ANNOUNCES '32 RANGE CAMPAIGN

CHICAGO—Hotpoint electric ranges will be sold in the metropolitan Chicago area by R. Cooper, Jr., distributor for General Electric refrigerators in the same territory, according to Clinton Rood, vice president of the R. Cooper, Jr., organization.

J. W. Burch, R. C. Leland, D. W. Martin, and F. A. Ramsdale, Hotpoint range specialists formerly associated with the Edison General Electric Appliance Co., have joined the R. Cooper, Jr., executive staff, and will have charge of the range operation.

In suburban sections Hotpoint ranges will be displayed in the Cooper retail stores, and retail salesmen connected with those stores will help round up prospects. Chicago retail salesmen, however, will continue to concentrate their entire efforts on selling refrigerators, according to present plans.

Until educational programs have been put into effect and the refrigerator salesmen have been given a chance to learn the fundamentals of range selling, most sales will probably be closed by range specialists, states Mr. Rood.

Refrigerator salesmen, however, will likely get a percentage of the commission on the sales they initiate, just as they do on commercial sales.

MAJESTIC STOCK SUIT IS DISMISSED BY U. S. COURT

CHICAGO—The suit brought against Grigsby-Grunow Co. and B. J. Grigsby by Sulzbacher, Granger & Co., New York stock brokers, was dismissed Dec. 6 in United States district court (southern New York) by Judge Patterson.

The suit was for three and one-half million dollars, being a claim for alleged loss of profits and commissions due to the failure of Grigsby-Grunow to complete the formation of a British company for the manufacture of Majestic radio products in Great Britain. The project was to have been completed in the summer of 1929.

INCREASE OF 110% SHOWN IN FRIGIDAIRE SALES

DAVENPORT—November sales of the Frigidaire organization in the Davenport district were well above quota, showing an increase of 110 per cent over November, 1930, A. C. Blunk, sales manager, reports.

MAJESTIC CO. TO SEPARATE RADIO & REFRIGERATION

Ditzell Named Head Of
Refrigeration Sales;
Vining Joins

CHICAGO—Majestic electric refrigerators and radios will henceforth be made, promoted, and sold by separate divisions of the Grigsby-Grunow Co., according to a decision reached here recently by B. J. Grigsby, chairman of the board.

Formerly the same sales, sales promotion, and production staffs directed work on both products. Under the new system a different set of executives will be assigned to handle each of the Majestic products.

John F. Ditzell has been appointed sales manager for the refrigerator division. V. E. Vining, formerly sales manager of Servel Sales, Inc., has also joined the sales staff of the refrigerator division.

Plans for 1932 call for a 100 per cent increase in production over that of 1931, according to Mr. Grigsby.

Quarter Statement

CHICAGO—Net results from operations for the first quarter of the Grigsby-Grunow Co.'s fiscal year, from June 1, 1931, to Aug. 31, 1931, show a volume of sales of \$4,256,218, and an operating profit of \$4,637. This is brought out in a letter to Grigsby-Grunow stockholders, dated Dec. 3.

After considering deductions for depreciation reserves in the amount of \$605,263 and contingent and other reserves in the amount of \$460,000, a book loss of \$1,060,626 resulted. The working capital, therefore, was not reduced through loss from operations.

"The financial condition of the company at Aug. 31, 1931, compares very favorably with the condition on May 31, in that the ratio of current assets to current liabilities increased from 2.7 to 3.33," the letter says.

Current assets at Aug. 31 were \$6,564,091, compared with current liabilities of \$2,964,820. Four hundred and thirty-five thousand of the working capital was spent to reduce bonded indebtedness, add to plant property, and liquidate contingency reserves between May 1 and Aug. 31.

The Grigsby-Grunow Co. had 26,422 stockholders as of Aug. 31.

KELVINATOR, COPELAND IN NEW ORLEANS TESTS

NEW ORLEANS, La.—A 10-day test to determine the type of refrigeration to be installed in the city's rehabilitated markets was started in the Howard annex of the city hall on Thursday, Dec. 10. Approximately \$1,000 worth of meats are being used in the test.

Manufacturers of electric (Copeland and Kelvinator) and block ice refrigerators have installed boxes in the improvised market space. The companies shared the cost of the meats being used in the experiments.

Regular inspections to determine temperatures in the boxes and the condition of the cuts are to be made, according to Theodore Grunewald, director of markets.

COMMONWEALTH EDISON STAFF VISITS KELVINATOR

DETROIT—Ten executives and salesmen of the Commonwealth Edison Co., Chicago, spent Dec. 8 at the Kelvinator plant conferring with factory department heads and touring the buildings. They were accompanied from Chicago by H. A. Dahl, regional manager, and T. H. Maginniss, district manager.

George E. Mason, president of the Kelvinator Corp., entertained the party at luncheon, after which they inspected the 1932 Kelvinator line in the showroom and heard sales promotion plans for the year outlined.

The Commonwealth Edison men were: K. W. Kaiser, G. H. Steuer, "Gil" Freyder, H. Nichols, Max Cutler, Charles Greiner, H. Siff, Mr. Savage, and L. Goodale.

MASS DEMONSTRATION LOCATES PROSPECTS

LOS ANGELES—Mass demonstration is a means of developing a live prospect list and potential customers for Richard Watson, Majestic refrigerator and radio dealer, 4411 S. Broadway, who states that he does an annual business of \$15,000 in refrigerators.

Mr. Watson has tested the value of this method of merchandising by following a policy which embraces mass advertising before women's clubs, banquet meetings, civic gatherings, church functions; in fact wherever it is possible to loan a refrigerator or radio and discuss the merits of both.

Time Only Cost

Watson's method of public advertising doesn't cost him a penny outside of his time as a speaker and the loan of the equipment. Whenever he hears of a meeting where it is possible to demonstrate either radio or refrigerator, he makes arrangements with the chairman in charge, the stipulation being that he will be permitted to mention his store, the make of the equipment and its features.

Under this group system of demonstration every club, every fraternal society, every church and civic organization becomes a prospect for a selling demonstration and in turn every member who attends one of these promotional events becomes a potential purchaser.

Drive-in Markets Source

Openings of drive-in markets especially have proven a fruitful source for prospects. This type of mass advertising is supplemented by advertising space in neighborhood newspapers, advertising slides in neighborhood picture houses and broadcasts over the smaller radio stations.

General Electric Appointees



A. A. Uhalt (left) and Fielding Chandler, manager and assistant manager, respectively, of newly-created dealer division of General Electric refrigeration department.

Employees Get Special Offer on Units

OMAHA, Nebr.—A special offer on General Electric refrigerators for the Christmas season has been made by the Nebraska Power Co. and the Citizens Power and Light Co. of this city to their employees.

During the Christmas season, the employees may buy a General Electric refrigerator with no payment down, 24 months to pay, and no carrying charge.

IOWA MAJESTIC DEALERS USE METER SALES PLAN

OTTUMWA, Iowa—More than 35 Majestic radio and appliance dealers from southern Iowa were present at Hotel Ottumwa for a session recently to hear Herbert Hieb of the Hieb Radio Supply Co., Des Moines, speak on Majestic refrigerators.

While sales and service for the winter were gone into, the point of the meeting was the 25-cent per day meter plan.

How Al Herman Gets New Prospects

BROOKLYN—Al Herman, salesman in the household division of the local Frigidaire branch always keeps a weather eye peeled upon the amount of ice that he sees going into a residence.

If it is a 30- or 40-lb. cake, he steps on the gas. But if it is a 70- to a 100-lb. cake, he calls the next day prepared to do business.

"A good sized chunk of ice means that the householder is probably spending around \$2.50 a week for his refrigeration, and so needs to be given the low-down on the economy of electric refrigeration," says Mr. Herman.

NEW WESTINGHOUSE SALES CO. TO OPEN SIX STORES

LOS ANGELES—With the opening recently of the first Ray Thomas, Inc., Westinghouse refrigerator salesroom, Mark Smith, vice president of the distributing company, states that six salesrooms are now being fitted for the approaching campaign.

These will be located in Pasadena, Hollywood, Long Beach, Santa Monica and Los Angeles.

The new showroom at 870 South Western Ave., is located in the heart of the Wilshire residential district and occupies half an acre of glass frontage. The showroom is modern in appearance with pine wall panelling and modern lighting.

Ray Thomas, Inc., has been identified with the electric supply field in Los Angeles for 25 years, having within the last few years extended the business into the radio market.

Now Westinghouse distributor in metropolitan Los Angeles, the concern enters the refrigeration field for the first time. This concern has a corps of more than 75 salesmen now being trained for Westinghouse refrigerator selling.

One of the first steps taken by the company after closing the contract with Ivan de Jongh, Pacific coast manager for Westinghouse, was the lining-up of Bullock's downtown department store to handle Westinghouse.

NORGE DISTRIBUTOR USES SYSTEM OF TRIAL SELLING

BALTIMORE, Md.—Columbia Wholesale, Inc., distributor of Norge electric refrigerators, here, has inaugurated a system of trial selling, according to L. L. Andrews, president of the firm.

Under this plan, Norge dealers are permitted to send a Norge to homes of prospective customers on trial or approval for one week. If after a week's trial the customer decides not to keep the refrigerator, the dealer repossesses it. The dealer bears the hauling charges, if any.

Mr. Andrews also announced that within the next two weeks he will have ready a new dealer-financing plan, designed particularly to aid smaller dealers.

O'KEEFE & MERRITT OPEN HOLLYWOOD STORE

LOS ANGELES—O'Keefe & Merritt, electric refrigerator manufacturer and distributor of the firm's own product, has recently opened a Hollywood branch at 1719 N. Vine St., in the heart of the movie colony.

ADVERTISING, SALES EFFORT BUILD FIRMS

WASHINGTON—Increased sales efforts and advertising policies are the most important reasons for successful records maintained during the depression, according to a report tabulated by the U. S. Department of Commerce from information concerning 358 firms.

Of the 358 firms, 202 were manufacturing industries, 43 retail distributors, and 10 wholesalers, representing 74 cities in 30 states. The conclusions are "in no sense the results of exhaustive investigation," the bureau reports.

Successful manufacturers, in addition to the two reasons above, gave market research, reduced prices, cooperation with dealers, improvement of service, and management of salesmen a prominent position in their marketing program.

Reduce Operating Expenses

In their production programs, firms focused their attention on reduction of operating expenses and the installation of modern equipment. Of 416 reasons or types of policies given by manufacturers, 254 were in the field of marketing, 91 had to do with the product, and 59 with production.

Among retailers, the chief reasons for successful operation of their stores were: employee training, reduction of expense, addition of new equipment, increased advertising, intensive or frequent sales, passing on wholesale price reductions, increased service, and maintenance of complete stocks.

Wholesalers gave reasons for success in the field of customer relations. More attention to the needs of retailers and intensive work with dealers are indicated as being instrumental.

Summary of Survey

The information in this report was gathered beginning in late summer, 1931, in response to many queries from business organizations. The summary below gives the reasons which manufacturers offered for success during the depression. Each figure represents the number of firms giving the indicated reason.

Marketing: Sales efforts, 46; increased sales efforts, 47; increased sales force, 4; sustained sales efforts, 5; advertising, 80; increased, 29; maintained, 19; extensive, 5; aggressive, 5; careful, 4; reduced, 4; other 14; following style trends, 4; general, 16.

Product, Policies

Product: Diversification, 14; specialization, 3; modifying product to appeal to customers, 17; product research, 11; new products, 20; quality of products, 20; packaging, 5; production, 59; purchasing 5; installation of modern equipment, 14; reduction of operating expenses, 24; reduction of overhead, 7; balanced production, 9.

Market research, 18; new uses of product, 3; management of salesmen, 10; sales territories, 5; cooperation with dealers, 17; analysis of sales cost, 8; expansion of foreign sales, 4; expansion of sales line, 4; improving service, 10; extension of credit, 4; increased sales outlets, 3; reduced prices, 18; other price policies, 4.

Financial policies, 5; other policies (largely administrative), 7.

CONSUMERS BUY ELECTRIC MACHINERY FROM FACTORY

WASHINGTON, D. C.—Manufacturers of electrical machinery and apparatus sell the largest percentage of their products direct from the factory to the industrial consumer, according to a preliminary tabulation of data in connection with the national census for 1929.

These figures are released by the U. S. Department of Commerce.

A percentage of 38.6 of the total sales of such manufacturers goes from the factory to the industrial consumer. The manufacturers ship 31.4 per cent of their wares to wholesalers, 20.8 per cent to their own wholesale branches; 5.9 per cent to retailers, 3 per cent to their own retail branches, and 0.3 per cent to household consumers.

SPRINGFIELD, ILL., COPELAND DEALER MOVES

SPRINGFIELD, Ill.—The A. Dirksen Appliance store has moved into a new showroom at 114 N. Fifth St., two doors north of its former location.

The Dirksen Appliance store is managed by Frank Redmond and sells Copeland electric refrigerators, electric washers, Atwater Kent, Crosley and Philco radios. The appliance store is connected with the A. Dirksen furniture store, one of the largest stores of its kind in Springfield.

COPELAND REPRESENTATIVE OPENS HEADQUARTERS

LOS ANGELES—Jay Kennedy, recently appointed Pacific Coast representative for Copeland, is making his headquarters with Thor Pacific, 1001 S. Hope St., California Copeland distributor.

DON'T COMPARE C.I.T. SERVICE with the ordinary "long range" finance service!



THESE C. I. T. LOCAL OFFICES WILL WELCOME YOUR INQUIRY

Abilene - Akron - Albany - Altoona - Amarillo - Asbury Park
Asheville - Atlanta - Augusta - Austin - Baltimore - Bay Shore
Beaumont - Beckley - Binghamton - Birmingham - Bloomington
Bluefield - Boston - Bronx - Brooklyn - Buffalo - Butte - Camden
Charleston - Charlotte - Chicago - Cincinnati - Clarksburg
Cleveland - Columbia - Columbus - Dallas - Davenport - Dayton
Denver - Des Moines - Detroit - El Paso - Erie - Florence
Fort Wayne - Fort Worth - Fresno - Glens Falls - Grand Rapids
Green Bay - Greensboro - Greenville - Hagerstown - Harrisburg
Hartford - Hempstead - Hickory - Houston - Huntington
Indianapolis - Jackson - Jacksonville - Jamaica - Jamestown
Jersey City - Johnson City - Kansas City - Kenosha - Knoxville
Lansing - Lexington - Lincoln - Little Rock - Los Angeles - Louisville
Manchester - Memphis - Miami - Milwaukee - Minneapolis
Montgomery - Montpelier - Mt. Vernon - Nashville - Newark
New Haven - New Orleans - New York - Norfolk - Oklahoma City
Omaha - Orlando - Owensboro - Perth Amboy - Philadelphia
Phoenix - Pittsburgh - Portland, Me. - Portland, Ore. - Poughkeepsie
Providence - Raleigh - Reading - Reno - Richmond - Roanoke
Rochester - Sacramento - St. George - St. Louis - Salt Lake City
San Antonio - San Diego - San Francisco - San Jose - Seattle
Sioux Falls - South Bend - Spokane - Springfield - Spring Valley
Stockton - Syracuse - Tampa - Toledo - Tucson - Tulsa - Utica
Washington - Watertown - Wheeling - White Plains - Wichita
Wilkes-Barre - Youngstown.

C. I. T. Service has this distinctive feature: it comes to you through a full functioning C. I. T. office in your territory... likely in your city.

No dealer has to be content now with receiving from a finance company just a bare money service. You are entitled to really effective cooperation where it is most needed—with credits and collections. But these tasks... so C. I. T. believes... call for the personal service of trained finance men on the ground and knowing local conditions.

We attach as much importance to our credit and collection services as to our strictly money service. That is why we have brought our men as close to you as your telephone, and why we urge you to let our nearest office serve you as if it were your own office, in the handling of all instalment detail.

C. I. T. Refrigerator Plans cover all models of all approved makes. Many of the country's most successful dealers use C. I. T. Service. Would you like to see what some of them have written about the part C. I. T. has had in building a profitable credit business?

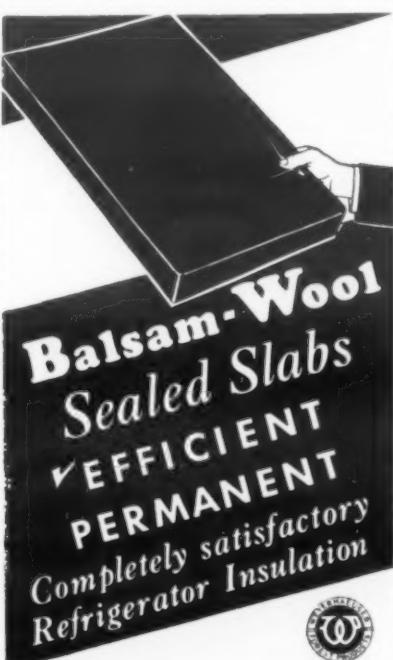
C.I.T. CORPORATION

ONE PARK AVENUE, NEW YORK

A Unit of

COMMERCIAL INVESTMENT TRUST CORPORATION
CAPITAL AND SURPLUS OVER \$90,000,000

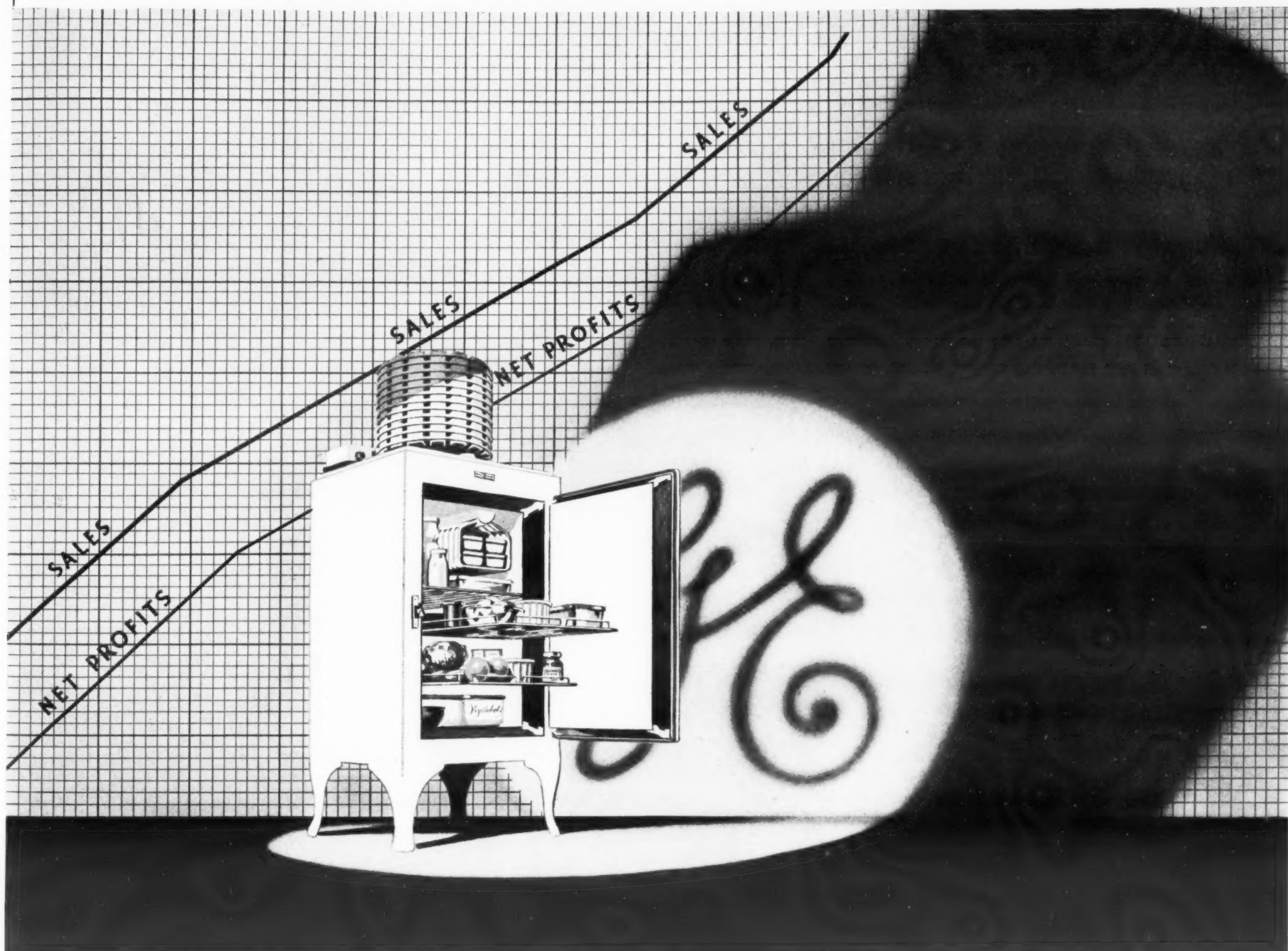
Subsidiary and Affiliated Operating Companies with Head Offices in New York
Chicago - San Francisco - Toronto - London - Berlin - Brussels - Paris
Copenhagen - Havana - San Juan, P. R. - Mexico City - Buenos Aires
Sao Paulo - Sydney, Australia - Offices in more than 160 cities.



WOOD CONVERSION COMPANY
Industrial Sales Offices:
CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg.
Detroit, 515 Stephenson Bldg.
San Francisco, 149 California St.

MONITOR TOP PERFORMANCE

keeps these LINES parallel



THERE is a great deal of *difference* between sales and net profits.

Sometimes dealers find that the cost of service calls entirely eats up the profits of a sale. Only faultless performance on the part of every refrigerator sold can keep NET profits and gross sales in parallel curves on dealers' sales charts.

In more than a million homes, the Monitor Top has established a record of attention-free performance that is without equal in the history of refrigeration. Every General Electric sold has won new friends. Each one of these million users is helping to build up an even greater public preference for the General Electric Refrigerator.

Today the Monitor Top is recognized as the mark of trouble-free refrigeration. Dealers know that it assures them NET

profits closely paralleling a steadily rising curve of retail sales.

There's nothing to get out of order in a General Electric. Amateur mechanics cannot tamper with the mechanism . . . it's all hermetically sealed-in-steel in the Monitor Top. Cabinets are ALL-Steel . . . built like a safe to give life-time service. Once delivered, the G-E requires only simple installation, (like connecting an electric fan) . . . and nothing more . . . not even oiling.

Other sales-building features include the exclusive Sliding Shelves, that increase storage capacity and end "reaching in"; acid-resisting porcelain interiors, and a 3-Year Guarantee that affords complete protection against any possible service expense. General Electric Co., Electric Refrigeration Dept. Sec. DF 122, Hanna Bldg. Cleveland, O.

GENERAL ELECTRIC

ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE AND COMMERCIAL REFRIGERATORS — ELECTRIC WATER COOLERS

POSTAL CARDS BOOST REFRIGERATION SALES

LITTLE ROCK, Ark.—"I find that brief personal messages written to prospects on government postal cards bring excellent results," declares Frank Burke, manager of the radio and electric refrigeration department of 555, Kelvinator distributor for the state of Arkansas.

When a special offer is being featured, or when a special sales drive is being made, these cards are used in considerable quantities. They comprise an inexpensive and highly efficient method of promotion, Mr. Burke believes.

Mr. Burke directs an extensive program which includes regular schedules of display advertisements in local newspapers, billboard posters, radio broadcasts, and direct mail sequences.

555 also handles Atwater Kent radios, and Mr. Burke reports that the two products make good companions.

SOUTH CHICAGO BUREAU SPONSORS EXHIBIT

CHICAGO—A four-day electric refrigeration show sponsored by the Electric Refrigeration Bureau of Southern Cook County was held at 12955 Western Ave., Blue Island, Dec. 2 to 5. Housewives from Blue Island, Chicago Heights, and Harvey attended.

UNIVERSAL COOLER SELLS 120 UNITS TO HOTEL APARTMENT

DETROIT—Sale of 120 of their model LP-37 self-contained refrigerators to the Clifford Hotel, Clifford and Duffield Sts., here, is reported by the Universal Cooler Corp. J. W. Taylor is vice president of the corporation.

Showing Frigidaires on the Coast



Frank McClellan, member of the firm of Day & McClellan, Los Angeles, Frigidaire dealer, and J. P. Amy, sales manager, received visitors at the booth at a recent California food show.

NEW PLAN OFFERED ZEROZONE CREDITORS

(Concluded from Page 1, Column 3)

chandise the refrigerators, according to Mr. Hickok, \$600,000 worth of Zerozones having been sold by Mr. Richland and his associates.

"Although the current position of the company has been strengthened, there appears little prospect of being able to satisfy the \$350,000 of old debts," Mr. Hickok stated, and urged the creditors either to consider some reorganization such as Mr. Richland's, or resort to immediate liquidation.

"We are of the opinion that the company cannot operate successfully under a receivership," Mr. Hickok said, "as the receiver cannot guarantee that the refrigerators will be serviced in accordance with the guarantee agreement."

Mr. Richland addressed the creditors next, telling about his merchandising operations, and presenting the proposition outlined below:

1. A Delaware corporation shall be formed, having 5,000 shares of preferred stock redeemable at \$100 per share, bearing \$6 annual cumulative dividends due quarterly after Dec. 31, 1933; these to be redeemable annually after Dec. 31, 1934, at the rate of not less than 10 per cent a year. Preferred stockholders shall have a vote in the event that dividends are missed for two consecutive years.

2. Common stock shall be issued so that the old management shall have one-half control, and Mr. Richland and his associates the other half.

3. The new corporation shall purchase all assets it desires from the receiver.

4. Each creditor of Zerozone Corp. shall be entitled to shares of preferred stock in accordance with the amount of the claim, fractional shares being issued for amounts under \$100.

After considerable discussion of the plan among the assembled creditors, a committee of five was appointed to consider the proposition. Jesse A. Joseph, representing about 60 creditors, is chairman, with the following committeemen: Donald R. Bryant, president of the Pullman Trust & Savings Bank, Chicago; A. J. Rumely, LaPort Foundry Co., LaPorte, Ind.; E. S. Pillsbury, president of the Century Electric Co., St. Louis, Mo.; and J. N. Lindsay of the Chicago Association of Credit Men.

After adjournment of the meeting, the committee convened with officers of Zerozone Corp. and representatives of Zerozone Products Corp. in consideration of the plan, and on Saturday, Dec. 12, mailed a letter to every creditor outlining the proposal and recommending authorization of the committee to act in accepting it.

ELIN CO. OPENS 2 NEW PHILADELPHIA STORES

PHILADELPHIA—The Elin Co., distributor of Westinghouse electric refrigerators, with main offices in the Terminal Commerce Bldg., 401 N. Broad St., has opened two new stores, making a total of seven.

One of the latest to be established is at 48 S. 69th St., which will serve the eastern portion of Delaware county. G. E. Ricard has been placed in charge as manager.

The other new store is located at 1533 S. Broad St., with W. R. Groves as manager. The other Elin stores are at 5523 N. Fifth St.; 4938 N. Broad St.; 4743 Frankford Ave.; 204 S. 52nd St., and 59 W. Chelton Ave.

KELVINATOR EQUIPMENT INSTALLED IN INFIRMARY

NORWICH, Conn.—The Hanover-Curland Co., 24 Franklin St., Kelvinator dealer, has been awarded the contract to install refrigeration equipment in the new infirmary being built at Uncas-on-Thames sanatorium.

MAYFLOWER USED IN MOBILE COOKING SCHOOL

MOBILE, Ala.—The Weatherby Furniture Co., Mayflower electric refrigerator dealer, is participating in a cooking school conducted by the Mobile Register. The Mayflower refrigerator is the only electric refrigerator used in the school.

DEALERS . . .

A LOW LIST
A HIGH DISCOUNT

FREEZE KING ELECTRIC

Model 72, \$159.00 F.O.B. Factory; 5 Cu. Ft.
Model 52, \$199.00 F.O.B. Factory; 7 Cu. Ft. 2-Door



Model 72

Gross Capacity, 5 Cu. Ft.
Shelf Area, 9 Sq. Ft.
Ice Capacity, 3 trays
Insulation, Dry Zero
Height, 52 1/2"
Depth, 25 1/2"
Width, 24 1/2"
List price, F.O.B. Factory, \$159.00

THREE (3) YEAR GUARANTEE
Desirable Territory Now Available

Molner Products Corp.
2430-34 S. Michigan Ave.
CHICAGO, U.S.A.

You Refrigerator Dealers Can
Make Extra Profits by Equipping
Every Refrigerator You Sell With

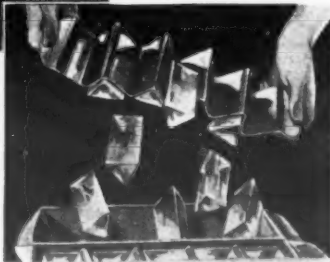
Easy-Out
ALL-METAL TWIN ICE TRAYS

HELPS YOU LAND SALES
—NO ADDED RESISTANCE
—Cost Can Be Included in the
Delivered Price of Unit



HOW IT WORKS

No water is needed to remove the ice from the Easy-Outs. Just press down sharply on ends of grid. Lift out the grid and twist or flex it. If an abnormal freezing condition occurs, a dash of water on back of tray produces immediate results.



FREE ELECTRIC FLASHER

This automatic salesman and demonstrator will help you sell Easy-Outs when put in your show window or in your front counter. It's FREE to all dealers who order a supply of Easy-Outs. Send for yours today!



Don't ignore the profit opportunities in refrigerator accessories. If you do, you are overlooking a great opportunity to get some extra profit without any extra work.

It takes no more effort to sell a refrigerator equipped with Easy-Outs than it does to sell one without these new trays. The few dollars added on to the delivered price will never increase sales resistance—and the Easy-Outs give you a great feature to play up and help close the sale.

Send for a supply of Easy-Outs today. Put one or more in every refrigerator you sell. You get the extra profit without any trouble at all—and many a refrigerator dealer is paying his rent with the extra profits he makes selling accessories like the Easy-Outs.

REFRIGERATION
ACCESSORIES
DEPARTMENT OF

McCORD

RADIATOR
& MFG. CO.
DETROIT, MICH.

As a Premium . . . or a Sideline



**PYREX
REFRIGERATOR
DISHES**

bring in
more business

GIVE THEM to your customers as an added feature to your refrigerators . . . or place them on sale as profit-makers that require no effort to sell. Whatever you do—Pyrex Refrigerator Dishes are bound to bring in more business to your store. These dishes are made of Pyrex heat-resistant glass. May be used for baking, serving and refrigerating. "Stacked," they save refrigerator space. All women like them . . . know about their qualities through the national advertising of Pyrex Ovenware. Pyrex Refrigerator Dishes retail for as little as 85c each—set of four, \$1.40. Get them from your distributor or write to Corning Glass Works, Corning, N. Y. Prices slightly higher in the West and Canada.

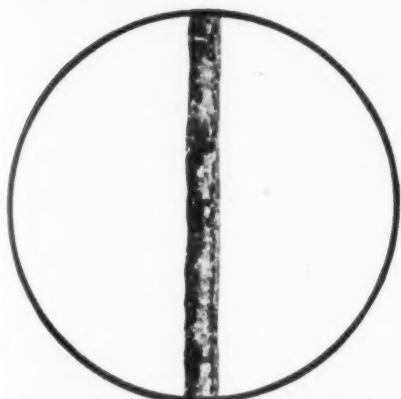
PYREX REFRIGERATOR DISHES

"Pyrex" is the registered trade-mark of Corning Glass Works and indicates their brand of resistant glass.



Years of Dependability Inside This ASPHALT SEALED Slab

Each of these photographs is magnified 20 diameters.



This photomicrograph shows a cross-section of a sealing paper reputed to be the best waterproof paper made. It is impregnated with asphalt. Water vapor readily passes through it.



This cross-section shown through the microscope is a standard duplex Kraft sealing paper. Its thin layer of asphalt is sandwiched between two layers of paper. It offers insufficient barrier to water vapor.



This is the special sealing paper made and used for wrapping each slab of Dry-Zero insulation. Its surface is perfectly smooth and provides the most perfect moisture seal known. It will neither crack nor flow at extreme temperatures.

The insulation in a refrigerator is not seen by the purchaser—he must take it for granted—he must accept its approval by the maker of the refrigerator. On it the manufacturer, knowingly or unknowingly, stakes his reputation and future.

To the buyer, the insulation may be out of sight and out of mind. But let the insulation fail—be it in a few months or a few years of actual use—and a mortal wound is dealt the reputation of that refrigerator.

One of the causes of failure that is inevitable in many refrigerators, is the absorption of moisture by the insulation. Too much care cannot be taken to assure safety from this menace to permanent refrigerator satisfaction. The difference in the precautions taken by Dry-Zero and others is worth careful consideration.

The Dry-Zero fibre is itself so resistant to moisture that the U. S. Navy uses the same fibre in their life belts. This fibre, after being "grained" into the Dry-Zero batt is enclosed in a special chip-board container that has been chemically treated to resist moisture effects and the common tendency to harbor fungus growth. Finally this container is completely enclosed in a covering of asphalt coated Kraft paper making the most perfect vapor seal known.

Other insulating materials are sometimes wrapped in waterproofed papers. But in actual use these papers provide only slight protection from the penetration of water vapor. The microscope shows the difference between these materials and the special asphalt paper made to Dry-Zero specifications and used only by Dry-Zero.

Nowhere in the industry is such care taken to assure permanent insulation efficiency. In no other insulation is such perfect protection from the ever present attacks of water vapor provided by the maker. Those manufacturers using Dry-Zero Pliable Slab insulation not only provide the best possible insulation now, but guarantee to buyers that this insulation efficiency is permanent. More important to the manufacturer, himself, is the assurance that from this source he will never risk disaster through a swelling volume of refrigerator dissatisfaction. The Dry-Zero efficiency in his refrigerator on the production lines will be constant for many years to come.

DRY-ZERO CORPORATION
Merchandise Mart - Chicago, Illinois
Canadian Office - 465 Parliament Street, Toronto

DRY-ZERO
THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

WHOLESALE CENSUS FOR STATE RELEASED

WASHINGTON D. C.—The first of a series of final state reports from the wholesale census, covering the state of California, has just been released by the Census Bureau. It marks the first time that detailed figures on wholesale distribution have ever been available, according to information from the U. S. Department of Commerce.

"Data on distribution of commodities have proved very difficult to obtain in former research projects," says the Department of Commerce comment on the report, "and for this reason the detailed information on the net sales of each commodity group by each kind of business and type of establishment should prove a great interest."

Of total net sales, amounting to \$4,159,323,000 by wholesale firms in California, this report shows the channels through which more than 92 per cent passes.

Some of the types of information presented for the state and separately for cities of 5,000 population and more, are: summary of wholesale trade by principal classifications; wholesalers, by kind of business; wholesale trade, by kinds of business; wholesale trade, by type of establishment.

Number of establishments, by type and kind of business; net sales, by type of wholesale establishments and kind of business; total expenses, by type of wholesale establishment and kind of business; summary of wholesale trade, by character or organization; wholesale trade, by number of marketing units and kind of business.

Employees engaged in wholesale trade, by kind of business; classification of wholesale merchants according to net sales, by kind of business; number of establishments, by kind of business for cities of 20,000 population and over; commodity sales, by kind of business

and type of establishment.

These figures show for each kind of business in the wholesale field the per cent of net sales sold on credit (56.84 per cent in California), valuable expense

data, size of stocks on hand, turnover, etc.

This report, issued as Distribution No. W-102, may be had for 15 cents from the Department of Commerce.

Miss America Meets Miss Brazil



Beauty queens of two continents—Miss America and Miss Brazil—paid a visit to the General Electric refrigeration showroom in Rio de Janeiro, while the American beauty was visiting in Brazil.

BILL CURBING SALE OF APPLIANCES PLANNED

CENTRALIA, Wash.—A bill to curb the activities of public utilities in selling electric refrigerators, ranges, and other appliances, will be introduced in the state legislature as a result of a meeting of furniture dealers here Dec. 3.

About 50 furniture dealers attended the joint meeting of the Southwest Washington Retail Furniture association and the Capital & Twin Harbors association. Among speakers were: M. C. Maxwell, who has an interest in 65 stores in Georgia; King Bryan, secretary of the Oregon Association; Del Teets, furniture dealer of Seattle; A. L. Callow, president of the State Grocers' association, and A. M. Wormwood, president of the state association of Washington.

The latter association a short time ago took the initiative in curbing the merchandising of electric appliances by those in the electric current business; this will, as a result, be made the basis of a proposed bill.

SERVEL DEALER ATTRACTS ATTENTION AT STATE FAIR

SHREVEPORT, La.—"Are you the Servel Mystery Man?" was the question on the lips of visitors to the Louisiana State Fair here, when thousands of handbills were distributed throughout the fair grounds one morning by the Johnson Furniture Co., Servel distributor.

"Find the Servel Refrigerator Mystery Man and Receive \$20 in Gold," said the handbill. Between 4:30 and 6 o'clock during the afternoon, the Servel Mystery Man—one of the factory representatives—was to mingle with the crowds. He had no identification; the only way to find him was to ask the question of every man on the grounds.

The representative reported that he frequently heard the question asked of a man standing at his side, and heard comments on the stunt throughout the afternoon. A woman finally asked him the question as he stood watching a game at a concession stand and was given the award.

The Johnson Co. reported satisfaction with the advertising it received through the scheme.

Brooder Films Bring Prospects

BALTIMORE, Md.—Harry and Albert Kratz, trading as Kratz Bros., 2109 West Pratt St., are increasing their sales of General Electric refrigerators on Saturday nights by showing "brooder" films against the plate glass window front.

Prospects are obtained from the crowds which gather to watch the films.

ANTIQUE CHINESE ICE BOX USED IN STOVER DISPLAY

CHICAGO — The refrigerator that served royalty a century ago, in contrast to that offered the general public today, is being used as window displays by the Stover Frigidaire Co., here.

Next to the most modern type of Frigidaire is shown the little antique Chinese ice box which was used more than a hundred years ago to bring snow down from the mountain tops for use in cooling foods served at the royal table. The box is lined with lead and provided with a small hole from which melted snow escaped. It weighs 48 lbs.

NON-SELLING DEPARTMENTS BUILD PROSPECT LIST

CHICAGO—Through a voluntary move on their part 65 members of the installation and service departments of the Stover Frigidaire Co. pledged themselves to supply the names of four bona fide prospects apiece during the month of November. Already 12 sales have resulted from this plan.

Balsam-Wool Sealed Slabs



NATIONALLY ACCEPTED
Completely satisfactory
Refrigerator Insulation

WOOD CONVERSION COMPANY
Industrial Sales Offices:
CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg.
Detroit, 515 Stephenson Bldg.
San Francisco, 149 California St.

MODERN HOME UTILITIES OPENS NEW RETAIL STORE

WATERBURY, Conn.—Modern Home Utilities, Inc., distributor of General Electric refrigerators here, has opened its fourth retail store at 67 Washington St., Middletown, Conn., reports Leland L. Stacy, sales promotion manager.

Ernest S. Linderme, former refrigeration manager of Hall's Music & Utility Shop in Middletown, is managing the new store. He has a sales force of six men.

The showroom is decorated in futuristic design, and the display includes almost every General Electric refrigerator model. During the opening week every visitor was given a G. E. water bottle. Newspaper advertising and a direct mail campaign were used to introduce the new dealer.

The sales force, which won third place for Modern Home Utilities, Inc., retail outlets in the recent Monitor Top Election contest, includes Reagh E. Neily, D. H. Rau, A. D. Chaffee, Sr., A. D. Chaffee, Jr., and E. A. Wilcox.

3 CONNECTICUT DEPARTMENT STORES SELL COPELAND

NEW HAVEN, Conn.—Three Connecticut department stores have recently been added to the list of Copeland dealers by the New Haven Electric Co., distributor of Copeland refrigerators for Connecticut and western Massachusetts.

The stores are Shartenberg's, New Haven; G. Fox & Co., Hartford, and the Howland Dry Goods Co., Bridgeport, according to announcement by T. G. Tynan, New Haven Electric sales manager.

FARNY ANNOUNCES NEW MOHAWK DISTRIBUTOR

NORTH TONAWANDA, N. Y.—One new distributor for Mohawk electric refrigerators and Lyric radios has been announced by Eugene R. Farny, president of the All-American Mohawk Corp., builders of these two products. Mohawk refrigerators will be distributed in and around Newark, N. J., by the Acme Distributing Co., headed by F. W. Wulack and H. W. Weinberg.

WAYNE REFRIGERATOR DEALER OPENS NEW STORE

SEATTLE, Wash.—New permanent headquarters for the Wayne electric refrigerators has been taken by the Wayne organization here, at 2219 Fifth Ave. Considerable additional floor space is available at the new location.

A REFRIGERATOR MOTOR IS DIFFERENT

Delco offers to electric refrigerator manufacturers two tried and proven types of motors—built to the highest standards of quality. Both types—the Delco


Condenser - Transformer

type and the Delco Repulsion-Induction type—will perform with the utmost dependability under all conditions. They differ from conventional motors because they were developed expressly for electric refrigeration service. They start under full load without drawing current in excess of ordinary lighting circuit limitations. They are quiet. Today, thousands of these Delco refrigeration motors of both types are in daily service—giving complete satisfaction. If you require a motor built to give unfailing service, call in a Delco Motor specialist. He offers you a known motor that exactly meets your individual requirements.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO



it's what they say that counts!

WE MAINTAIN that *fully automatic operation*—that is, four different, *constant* temperatures, each *automatically controlled*—is, from the owner's standpoint, the most desirable feature in an electric refrigerator. And, consequently, the greatest sales asset from the dealer's standpoint. But don't take *our* word for it. Go straight to headquarters—to the women who buy, *and own*, electric refrigerators.

Ask them which they would rather have—an electric refrigerator in which the freezing speeds were controlled manually by *setting a dial* or one which was *fully automatic*—with no dials to set—nothing to remember or forget—no danger of freezing the contents of the food compartment.

Without exception, every woman will prefer *fully automatic operation*. And it is what they say, what they prefer that counts!

Kelvinator *alone*, of all manufacturers, offers *fully automatic refrigeration*, with four different zones of cold—four constant temperatures that require *no attention or supervision*.

This great engineering feature is exclusive with Kelvinator. Likewise, this tremendously valuable sales feature belongs to *Kelvinator dealers alone*.

For your own enlightenment, make this test. It will show you unmistakably why Kelvinator is the *biggest opportunity* from the dealer's standpoint, in the industry to-day. And after you have made it, we will be glad to talk with you regarding the franchise.

KELVINATOR CORPORATION
14245 Plymouth Road Detroit, Michigan

Kelvinator of Canada, Ltd., London, Ontario
Kelvinator Limited, London, England





Kelvinator

G-ET TYPE KC

The ACE OF MOTORS

THE General Electric Type KC
"care-free" motor for modern
refrigerator drive has the abso-
lute minimum of wearing parts.
Everything about it spells sim-
plicity, long life, and obvious
dependability.

Get the facts about the Type KC;
motor specialists in the nearest
G-E office will be glad to tell you
about this "care-free" drive . . .
the Ace of Motors!

GENERAL  ELECTRIC

7 DEALERS COOPERATE IN WRITING CONTEST

FRAMINGHAM, Mass.—Seven electric refrigeration dealers here representing Norge, Majestic, General Electric, Servel, Frigidaire, and Westinghouse have launched a cooperative endeavor to pull in prospects by running a prize contest.

Opening with a half-page spread announcement last week, the competition will continue until Dec. 22. Awards of \$50, \$10, \$5, and ten of \$1 each will be given for the best 200-word essays telling "why I think electric refrigeration is best for the preservation of foods."

In the contest announcement, it was stated that there are seven subjects to be discussed in the essay, with each dealer in the group offering one. Thus, to qualify it is necessary for each entrant to visit all seven dealers, who file the entrant's name as a prospect, and give him numbered tickets which must be mailed to headquarters with his essay.

Contributions of \$25 from each dealer made this venture possible. Of this total, \$100 goes for advertising and the remaining \$75 for prizes. If the contest proves successful, the group intends to follow it with similar competitions throughout the winter season.

The list of firms includes George T. Stevens Co., Edison Electric Illuminating Co., John A. Murphy, C. W. Hanson Co., R. E. Eldridge, Jack O'Brien's, and Garino's Music & Radio Shop.

H. H. KENNEDY ADDRESSES AKRON ELECTRIC GROUP

AKRON, Ohio—H. H. Kennedy of the Frigidaire Sales Corp. spoke at a meeting of all refrigerator salesmen in the city, Dec. 4, under the auspices of the refrigeration council of the Electrical League of Akron.

Monthly general salesmen's meetings have been held by the council, which functions as a local refrigeration bureau. S. C. Hansen is manager of the Electrical League.

26 years experience
in making good
compressors assures
reliable

HIGH SIDES and COMPRESSORS

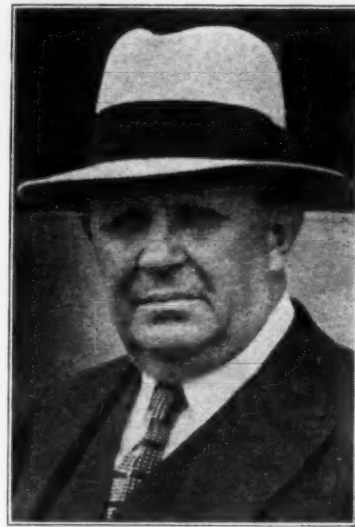
by BRUNNER

BRUNNER knows how . . . For twenty-six years the complete facilities of this organization have been devoted to the manufacture of compressors and in solving problems arising in connection with their use.

The sum total of this experience is found in BRUNNER Precision built High Sides and Compressors for the Refrigeration Industry. Quiet, rugged, fool-proof, these units provide a sound foundation on which to build with confidence . . . and to make profits.

Manufacturers and assemblers of Electric Refrigeration will find in BRUNNER High Sides and Compressors the qualities which build increasing good will for their pro-

Veteran Dies



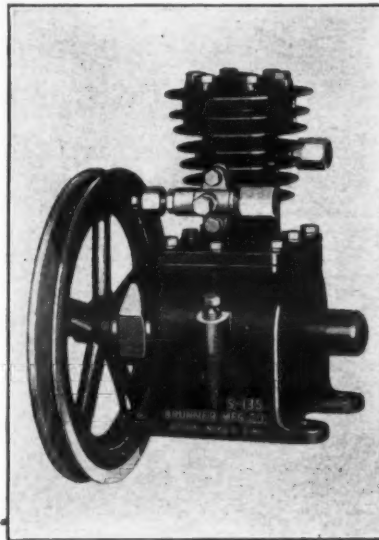
E. E. McMullen, Norge vice president and Missouri distributor, died following attack of apoplexy recently in St. Louis.

GIBSON UNIT OFFERED AS THEATER CONTEST PRIZE

GREENVILLE, Mich.—Through co-operation with the Butterfield Theaters of Michigan, Gibson distributors and dealers are offering as a prize during Butterfield's "Joy Month" (December), a Gibson electric refrigerator.

During the month, Butterfield theaters throughout the state have a Gibson display in the lobby, and run a 100-ft. sound picture advertising the Gibson during the program. The dealer's name appears on the screen at the end of the picture.

Each patron is given a coupon ticket, and the drawing will take place the last of the month. One refrigerator will be given away at each theater.



The BRUNNER S-135 COMPRESSOR

Bore 1 1/2" Stroke 1 1/2"
Displacement 2.8 cubic in.

1-6 H.P. 340 RPM. I.M.E. 100 lbs.
1-4 H.P. 460 RPM. I.M.E. 135 lbs.

Quiet • Long Life
Fool Proof • Service Free
Reserve Power

ducts. The unique Engineering Service afforded BRUNNER customers is proving highly effective both in the performance of equipment and economy of production.

You'll do your business a good turn by getting the complete Brunner story.

BRUNNER MANUFACTURING COMPANY
UTICA, NEW YORK

BRUNNER

ELECTRIC APPLIANCES SPEED SALE OF HOME

TROY, N. Y.—Sale of a home ready-equipped with electrical features, within six days after it was first put on the market was the outcome of an experiment tried by the Niagara-Hudson Power Co., in cooperation with a contractor here.

Three houses were under construction by B. W. Feathers, contractor and builder, when he, with C. W. Snyder, appliance sales supervisor for the Niagara-Hudson Power Co., and J. H. Van Aernam, New York power merchandise manager, developed the plan for a try-out.

All three homes were being built to sell at \$5,800 each. An electric range, refrigerator, ventilating fan, kitchen clock, bathroom heater, special shaded lighting, and plenty of electrical outlets were added to one of them, and the selling price raised to \$6,200.

A series of advertisements was prepared to run over a period of six days, promoting the idea of purchasing an electrically equipped home. The first of these, running on a Thursday night, invited inspection of all three houses, but stressed the electric home. In spite of rainy weather, 125 prospects inspected the home the next night.

On Tuesday morning the electric home was sold. As yet the two unequipped homes have not been purchased.

NEW SECRETARY NAMED ON G. E. SALES COMMITTEE

SCHENECTADY, N. Y., Dec. 14—John Anderson, assistant to J. G. Barry, vice president of General Electric since 1923, has been appointed secretary of the General Electric Co. sales committee, Mr. Barry announced.

He succeeds E. G. Waters, who is retiring at his own request after more than 42 years of continuous service with the company, 25 of which have been as secretary of the sales committee.

Mr. Anderson has been with General Electric since September, 1910, after he had received a degree in electrical engineering from Lehigh. He spent a year in the test course, two months as a student salesman, then entered the light engineering department.

For about seven years he was in the turbine sales department; two years in the merchant ship equipment department, going from there to the position from which he has just been promoted.

ELECTRICAL SHOW OPENS REMODELLED STORE

AKRON, Ohio—Following the opening of its remodelled and enlarged department store here, the C. H. Yeager Co. recently sponsored a two-day Westinghouse electrical show in the new exhibition hall.

The store's new electrical household appliance section had charge of the show, during which three refrigeration demonstrations per day were given. "Willie Vocalite," the electric man, was an added feature.

APGAR ELECTRICAL DEVICES MOVES OFFICE

PHILLIPSBURG, N. J.—Apgar Electrical Devices, Copeland dealer for the Binder Distributing Co., has moved to larger quarters at 150 South Main St. Clarence Apgar is proprietor of the store.

The dealer carries commercial units with Warren display cases and cabinets, besides its domestic line. Official opening of the new store was on Dec. 5.

Balsam-Wool
Sealed Slabs
VODORLESS
SANITARY
Completely satisfactory
Refrigerator Insulation

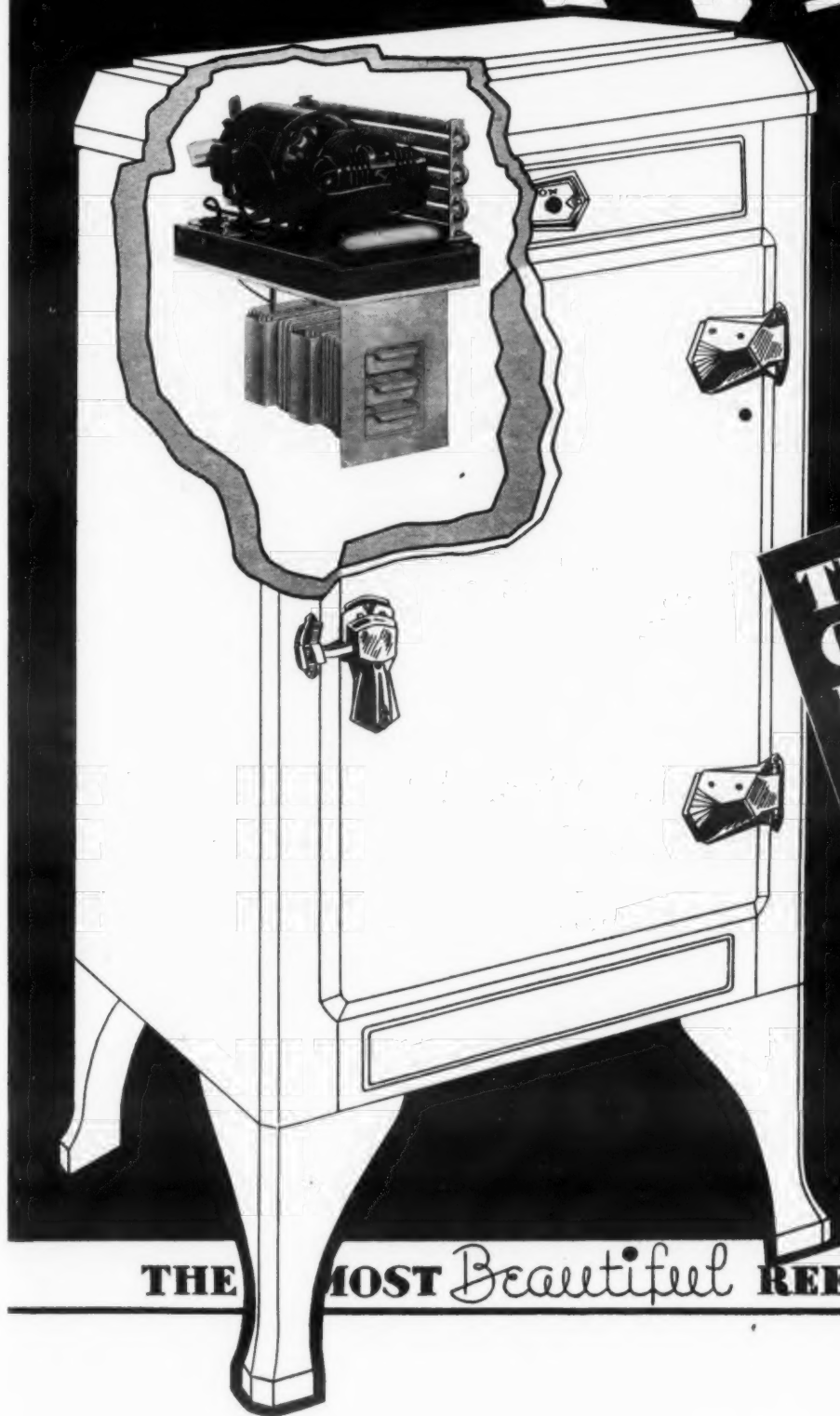
WOOD CONVERSION COMPANY
Industrial Sales Offices:

CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg.
Detroit, 515 Stephenson Bldg.
San Francisco, 149 California St.

GIBSON

MONOUNIT

Electric



**THE GREATEST
OPPORTUNITY
FOR DEALER
PROFITS EVER
OFFERED IN THE
REFRIGERATOR
INDUSTRY ***



THE MOST Beautiful REFRIGERATOR IN THE WORLD

* **WE'LL PROVE IT!**

WE HAVE THE PRODUCT, THE CUSTOMER SALES APPEAL, AND THE MOST DISTINCTIVE, RESULTFUL PROMOTION PLAN EVER DEvised.

**WRITE OR WIRE
COLLECT FOR COMPLETE DETAILS**

3 YEAR GUARANTEE

**50
YEARS REFRIGERATION EXPERIENCE
OVER 3 MILLION SATISFIED USERS**

Are you enjoying a substantial volume of sales? . . . And from each sale do you make a *real* profit? . . . Do you?

See what Gibson has to offer and you'll get a much broader outlook on both sales and profits . . . You will be impressed with the *super* sales appeal of the Gibson and the unusual advantages in dollars and cents profit from the very unique sales plan Gibson has developed.

NOT "just another refrigerator" but a *super* electric of unmatched beauty and efficiency. Backed by more years of research and proving—more concentrated effort in every phase of refrigeration engineering.

Gibson brings you the greatest refrigeration advancement of all time . . . The **MONOUNIT** . . . with approximately half the size and half the weight—stripped of every non-essential—and built to give years on end of satisfactory service.

The **MONOUNIT** is quiet. *It stays quiet* because it is the one unit machined to the watchmaker's precision of accuracy. That quietness is the sign of built-in quality which *YOU* will like and *YOUR CUSTOMERS* will like.

You can't beat the Gibson—You can't even tie it . . . Prove it for yourself.

Gibson's superiority will be told to Millions of consumers during 1932 thru leading National publications.

GIBSON ELECTRIC REFRIGERATOR CORPORATION
GREENVILLE MICHIGAN

MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Published Every Week by

BUSINESS NEWS PUBLISHING CO.

Also publishers of REFRIGERATED FOOD NEWS (monthly) and the REFRIGERATION DIRECTORY (annual)

550 Maccabees Building, Woodward Ave. and Putnam St. Detroit, Michigan. Telephones: Columbia 4242-4243-4244

Subscription Rates:

U. S. and Possessions and countries in Pan-American Postal Union: \$2.00 per year; 3 years for \$5.00

Canada: \$5.00 per year (U. S. money).

All Other Countries: \$3.00 per year; two years for \$5.00

Advertising Rates on Request

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VOL. 6, No. 15, SERIAL No. 143, Part 1, DEC. 16, 1931

No Dumping

WHEN so many refrigeration concerns were expanding at a rapid rate this spring, alarmists sounded a call of warning. And with reason.

Towns which had two dealers in 1930 had six or eight in 1931. Companies which had produced but two or three thousands units a year previously were now stepping production up into the five-figure class. A great many newcomers were entering the distribution picture, largely recruited from the ranks of radio and music merchants, furniture stores, hardware dealers, and department stores; and hundreds of them had no experience in modern merchandising methods.

These old-line dealers were competing with aggressive specialty selling organizations which knew their business and which, keen observers thought, would put the fear of the Lord into the hearts of the over-the-counter merchants who had just joined the industry.

White Elephants Stampede

It was predicted that panic would seize the newcomers when the leaves began to turn and the refrigerators they had stocked so confidently in the spring were still remaining on their floors. And when even a mild form of panic grasps the heart of a conventional merchant, his first thought is that he must get rid of his white elephants at emergency prices, at a loss if necessary. Thus the alarmists foresaw dumping on a large scale when the regular selling season was done.

As indicated above, the alarmists had reason on their side. Specialty selling organizations did run away from the old-line merchant dealers, did leave them with refrigerators on the floor when fall came. But contrary to their established practice (particularly some of the radio dealers) no dumping followed. Either unwittingly or because somebody had figured it out, leaders of the industry had averted a minor crisis.

How It Was Done

How did they do it? Simple. By gearing up their own organizations to do an effective selling job in the fall and winter months. One contest after another was staged. Advertising did not slack. Special stunts were promoted. Extra compensation was dangled in front of the eyes of salesmen. Sales managers drove and drove hard.

Result: Small-time dealers who were still patiently waiting for the buying public to walk in and pick out a refrigerator took heart. They heard reverberations from the contests being staged by active dealers down the street, they watched delivery trucks loaded with refrigerators drive past, they heard stories of big sales. Whereupon they decided that all this talk they had heard about refrigeration being a seasonal business must be the bunk. And they did no dumping.

Take a Hint

Even more important than refraining from slashing prices ruinously on unsold refrigerators was the fact that many of these old-fashioned merchants took a hint from the aggressive merchandisers, hired a salesman or two, sent out some literature, and tried a little specialty selling of their own for the first time. To their great joy, and sometimes to their great surprise, their follow-suit worked, and the refrigerators moved.

Specialty selling is still the cornerstone of electric refrigeration merchandising. Specialty selling methods are apparently the only methods by which electric refrigerators can be distributed in large quantities. And insofar as the industry's distributors (many of whom learned their tricks in the automobile and radio fields) have lead the way in teaching their dealers how to use direct mail, the cold canvass, and persistent follow-ups, they have helped the industry keep its feet during a period of rapid extensive expansion.

And while the industry's distributors were helping these newcomers keep their feet in the midst of hard-driving competition, the industry's leaders helped them keep their heads by demonstrating that electric refrigerators could be sold during cold weather.

Adroit Strategy

Thus in the process of filling up the valleys in the sales curve, executives of the electric refrigeration industry put to rout one of the most threatening menaces to their continued profits.

By driving their own organizations to new fall records, they bolstered the confidence of the scores of new dealers who might have been lost in the shuffle and been tempted to dump at ruinous prices. And this latter group was inspired to go out and do some genuine selling.

Distributors and dealers who have enjoyed good sales volumes this fall for the first time have their leaders to thank for an adroit piece of sales strategy. And the industry, instead of being set back, can continue to move forward with confidence and alacrity.

GLEANINGS

FROM RECENT PERIODICALS

Mass Production of Homes

TAKING products out of the high price class and putting them within the reach of average pocketbooks usually has a stimulating effect on business, particularly when the product is something that everybody wants.

And there is no doubt that our longest and most substantial period of prosperity was ushered in with the advent of the automobile. But it was not until Ford had his big idea of a small price that the automobile business began to boom. That was about 1903. So many people having average pocketbooks wanted cars that this business kept booming until 1929 and carried many another business along with it.

Now, there is a car for about every three persons in the United States, and since three people could probably squeeze into each car, the whole nation could ride at once if it had to!

Homes are certainly as much of a necessity as are cars. Yet, according to the President's Conference on Home Building, new houses meeting an acceptable standard of living are too expensive for two-thirds of our population.

The committee believes that large scale production is the answer to the home cost problem, just as it was to that of the motor car.

Important examples of the application of large scale home building operations include the Bridgeport Housing Co., Bridgeport, Conn.; the Queensborough Corp., Jackson Heights, L. I.; the City Housing Corp., which built Sunnyside Gardens, L. I.; the Buhl Foundation Plans, Pittsburgh; the Metropolitan Insurance Co., L. I.; various projects of the New York Board of Housing; the Marshall Field Project and the Michigan Boulevard Gardens Apartments in Chicago. Through some of these large scale operations, good living conditions are provided at monthly rents as low as \$9.00 per room and with unique safety to investment.

The making of low cost homes may be said to be in the "laboratory" stage now. After we learn more about it through the intensive studies now going on, the results should have a decided effect on the extension of home ownership. For, as the committee says, the same principles of large scale building are applicable to small private dwellings as well as to large apartment buildings.

Perhaps that "new invention" that people are looking for to start the demand for materials and labor is a low cost home. Nearly everybody could use one.—National Publishers Association Bulletin.

Making A Poor Contract Good

IN every salesman's experience there comes a time, often many times, when it is necessary to take a contract back to the customer and sell him on the idea of making fewer and bigger monthly payments or paying more money for the job. To most salesmen either task seems almost impossible, particularly that of getting more money for the job. Often he argues that the home office should accept the contract, without, of course, cutting commissions, even though doing so would entail considerable loss, rather than have him go back and confess that an error has been made.

The salesman's feelings in the matter are easily understood. He has probably worked long and hard to get the contract, usually against the stiffest sort of competition, and the terms of the contract are not what he wanted, but the best he could get under the circumstances. Consequently, he feels sure that if he goes back and asks for more money, the customer will cancel the order and buy the competitive machine that he almost bought in the first place.

The trouble with the salesman is that he has considered only his own reactions. What he should do is analyze his customer's probable mental reaction. He must consider the thing from the customer's viewpoint.—The E. T. U., November.

Letters from Readers

Chairman Davidson

Electric Refrigeration Bureau
National Electric Light Association
Omaha, Nebr.

Dec. 2, 1931.

Editor:

I spent a part of Thanksgiving Day at home enjoyably reading the Nov. 18 issue of ELECTRIC REFRIGERATION NEWS. You have a splendid paper chuck full of interesting matter, which I should think would give very valuable information to agencies selling the product about which you write and which are advertised in the ELECTRIC REFRIGERATION NEWS.

I am very anxious that you know, too, how pleased I am over the valuable space that you gave for electric refrigeration bureau news items.

J. E. DAVIDSON.

Chairman, Executive Committee.

Agrees With Editorial

Strong, Carlisle & Hammond Co.
1392 West Third St.
Cleveland, Ohio.

Nov. 27, 1931.

Editor:

The writer has been connected in various capacities with several makes of electric refrigerators in the past five or six years and I am still a big booster for your periodical.

Your editorial in the Nov. 25 issue of ELECTRIC REFRIGERATION NEWS interests me very much as we have, for quite some time, been thinking along those lines.

A. I. MORRISON,
District Mgr., Norgie.

Ditto Above from 'Hank' Boyle

Electrolux Refrigerator Sales
New York, N. Y.

Nov. 27, 1931.

Editor:

I literally pounced upon your editorial in the Nov. 25 issue of ELECTRIC REFRIGERATION NEWS. It is one of the most basic things of its character that I have read in some time and so interestingly confirms my own views on the subject that I can't help but elaborate somewhat.

If the manufacturers of appliances ever intend to turn the tide of business to their way, they must certainly seriously consider the basic education of the men involved in the retail sale of their product.

Early last spring when we issued our Plan "B" for retail selling, one of the most important statements that went into this plan was the fact that the two most vital reasons why more refrigerators were not sold was, "Fear of buying the wrong refrigerator on the part of the public and lack of solicitation on the part of the salesman."

This fear of buying the wrong refrigerator is, in my experience, based almost entirely on the great amount of misinformation given out by badly schooled salesmen.

Unlimited vitality on the part of the instructor, a bearing down on the preponderance of the company name and elaborate (although sometimes childish) methods of demonstrating sales points can usually win the hearty applause of the sales group that is listening; but unless every salesman at the school can face a prospect the next day with greater confidence and with new words to use, then the sales school has been a failure.

Enthusiastic salesmanship, a long repetition of the case method or a series of stirring stories about individual sales, while extremely entertaining, have little value for the man who must sell a prospect the following day.

There have been a great many sales courses offered to salesmen by various manufacturers. Seldom have the sales courses agreed on the essentials necessary for getting more business. One man insists that there are seven steps to a sale—somebody else that there are five steps, and another opinionated man will say 10.

Our belief is that one of the main reasons a salesman does not sell more is because he is afraid the prospect will ask questions he cannot successfully answer. The only way in which fear can be eliminated is by education.

Remove the doubt of the unknown in the salesman's mind and he is not afraid of questions or objections from the prospect.

The way to eliminate this fear is to be very basic and to go to the roots of selling of the product rather than to depend on the obvious for results.

The fact that a company has sold thousands upon thousands of its product is of no value to the salesman when the prospect says, "Why should I buy your particular product?"

In preparing our own educational sales work for 1932, we have taken every possible factor into consideration. We have geared this educational work to the level of the man who must use the information. This information has been digested and re-digested for the gleaning of those facts which are essential in getting the order, and eliminat-

ing those facts which, while interesting, are non-essential in getting the order. This will be our humble contribution to the spirit behind your editorial.

It is my personal hope that this particular editorial will strike home and that, as time goes on, more people will buy appliances, particularly refrigerators, on a more intelligent basis than they are being sold today.

"Fear of buying the wrong refrigerator," on the part of the prospect, can be eliminated only when the salesman who talks to the prospect can tell a good, honest, basic and understandable story on what that particular refrigerator will do for that particular prospect.

You will pardon me, I hope, for going into such length to air my own views, but, as you can see from the gist of this letter, I do think that a sound method of the salesman's education will play an important part in maintaining the standard of refrigeration sales in 1932.

H. S. BOYLE,
Sales Promotion Manager.

He Knows Champaign

Grigsby-Grunow Co.
(Incorporated)

5801 Dickens Ave.

Chicago, Ill.

Dec. 4, 1931.

Editor:

I got a tremendous "kick" out of your "Editor on Wheels" article on page 6 of your Nov. 25th issue, on the subject of the towns of Champaign and Urbana. It happens that I went to Illinois for three years and still go back there religiously for "Homecoming" and other football games.

Despite the fact that I was down there so long, your article showed me quite a few angles on the two towns of which I had no idea.

Would appreciate having someone tear out page 6 from two or three copies of this issue and send them to me.

M. W. THOMPSON,
Asst. Director of Advertising.

The News Becomes a Geography Textbook

Hotel Reich
Gadsden, Ala.

Dec. 3, 1931.

Editor:

By accident I came in contact with two or three copies of your News and read the column "Editor on Wheels" which I deem most highly interesting and replete with valuable information not found in Chamber of Commerce literature or trade journals.

The writer is a school teacher in the high school and I have used your articles in class upon several occasions.

It is my hope that the wheels will carry you to our live town in the near future and that you will come out to the high school and give the 900 students there a talk on any subject that you wish to speak upon.

By the way, would you mind mailing a few old copies of other places visited—the articles read were on Atlantic City and West Baden and were the most descriptive of some 10 or 20 other writings that I have found upon the same subjects.

MARK D. COREY.

Porch Lights Burn All Night in Marshall

Columbus, N. C.

Dec. 9, 1931.

Editor:

I've followed with great interest your intimate touches to the News and especially your comments on the old home towns of Marshall, Greencastle and Champaign-Urbana.

Maybe Mr. Henry B. Longden has ideas of his own about Greencastle, but your survey of Marshall lacked only the mention of the fact that they burn the porch lights all night—on the city meter.

ROY E. BAIRD.

Fraternity Spirit

Electrolux Refrigerator Sales, Inc.
51 E. 42nd St.
New York, N. Y.

Dec. 1, 1931.

Editor:

For a long time I have been intending to write you a note expressing my appreciation for the interesting comments published in the Expansion Valve regarding the Evansville convention. This feature to me is the most interesting part of the ELECTRIC REFRIGERATION NEWS. Invariably when I get my copy this is the first section that I turn to.

The one thing that I like about ELECTRIC REFRIGERATION NEWS is its humaneness. The breezy personal color which you inject so well in your column contributes much to the "fraternity" spirit of the industry.

W. A. ROBINSON.

CHRISTMAS MAILING USED BY DISTRIBUTOR

CHICAGO—A direct mail campaign, planned to be followed up by personal calls, is being used for Christmas sales promotion by Frank H. Johnson-Son-Crowen, Inc., Westinghouse dealer.

A series of cartoon pamphlets sent each day to five persons out of each prospect list of 150, forms the basis of the campaign. The list is thus completed in 30 days. Each piece has the prospect's name drawn in, matching the headline type of the pamphlet.

The first is a drawing of a man trying to decide between various gifts for "her" for Christmas. Inside is a letter mentioning no article or firm name, but promising to help him out of his dilemma within a few days.

In three days, another cartooned note arrives, with the name of the firm on it, showing Santa Claus and his gnomes explaining the merits of a Westinghouse electric refrigerator as a Christmas gift.

On the fifth day, comes a note picturing Santa and the customer flying back with the refrigerator safely tied on the back of the plane.

The salesman then makes his personal call, armed with a cut-out of a complete kitchen, even to the food to be placed in the refrigerator, to be given to the children of the household.

This mail campaign is being used on a list of 7,000 prospects, and time is allowed for three weeks of follow-up calls.

DISCOUNT BANK APPROVED BY HOOVER CONFERENCE

WASHINGTON, D. C.—Adoption by the President's Conference on Home Building and Home Ownership of a resolution endorsing President Hoover's plan for a system of home loan discount banks and provision for a continuing committee to carry on its work marked the closing session of the organization's conference here Dec. 5.

President Hoover has suggested another similar conference in about a year. The report of that part of the conference which dealt with refrigeration in the home, was extracted in *ELECTRIC REFRIGERATION NEWS* for Dec. 9.

In his talk before the conference, Secretary of the Interior Ray Lyman Wilbur said: "This housing war is not to stop until every American home is clean, convenient, wholesome, sanitary, and a fit place for a mother and father to bring to maturity young citizens who will keep our nation strong, vigorous, and worthy."

Thirty committees gave their reports at the four-day conference, which covered building, ownership, and beautification, as well as equipment of homes.

DR. ALLISON ADDRESSES SPRINGFIELD, ILL., DEALERS

SPRINGFIELD, Ill.—Local electric refrigeration dealers attended a luncheon recently at the Abraham Lincoln hotel to hear results of Electric Refrigeration Bureau campaign staged this year to sell one million electric refrigerators. The meeting was arranged by the Illinois Power & Light Co., local dealers for Frigidaire.

Dr. G. W. Allison, field manager of the bureau, was the principal speaker. A. H. Kallstedt, state director for Illinois, attended.

Firms whose representatives attended the noon luncheon included: The John Bressmer Co.; Johnson and Hatcher Co.; Capitol City Paper Co.; A. Dirksen Co.; J. A. Van Natten; Schlitt Hardware Co.; Meador Electric Co.; A. W. Sikking & Co.; Bruce Co.; Morgan & Sons; James & Co.; and Illinois Power & Light Co.

FINBERG BROS. WILL SELL NORGE REFRIGERATORS

LAWRENCE, Mass.—M. Finberg & Bros. Co., 481 Common St., will sell Norge electric refrigerators here, according to Harry A. Donovan, Norge district manager.

Meyer Finberg, president of the company, is making plans for a new showroom on Essex St., where Norge refrigerators and Timken burners will be displayed.

20 MAJESTIC UNITS PLACED IN APARTMENT

SPRINGFIELD, Ill.—The A. W. Sikking Co., local dealer for the Majestic electric refrigerator, has just installed 20 refrigerators in the new Schnepf and Son apartment building at the corner of Monroe and College streets.

BUCOLA SALES CO. FORMED

PROVIDENCE, R. I.—The Bucola Sales Co., formed to sell refrigerators, has been located in Pawtucket. It is headed by Omer Paquin, 934 Smithfield Ave., Lincoln; Frederick Ricci, and G. Raymond Hunter.

Back Door Sale Beats Rivals

HUNTINGTON, W. Va.—Jim Muller, salesman for the Van Zandt Supply Co., Westinghouse dealer here, has his own way of making sales.

Recently he stopped to call on a prospect and discovered three rival refrigerator salesmen talking to her at the front door. Instead of joining the crowd on the front steps, he drove quietly around to the rear of the house and had the maid call Mrs. Prospect to the back door.

While his competitors made conversation and shuffled about awaiting her return, Muller sold her a Westinghouse DWP-75 and had it delivered to her the same afternoon.

REFRIGERATION DEALER TO OPEN 4 NEW SHOWROOMS

PHILADELPHIA—Three new stores and a larger showroom for another are planned by the Universal Radio Corp., operated by radio station WCAU, which owns a group of retail refrigerator stores. This announcement is made public by Walter P. Davis, refrigerator division manager of the corporation.

The stores handle Norge, Majestic, Mayflower, and Copeland lines.

The store now at 63rd and Market Sts., will change its location to 69th and Market, on Jan. 1. Arthur Pike will be manager of the store in its new location.

W. H. Moon has been appointed manager of the recently opened store at 20th and Market Sts.

The three new stores to be opened in the near future are to be in Camden, N. J., Germantown, Pa., and North Philadelphia.

The company advertises in newspapers three days a week, and broadcasts over station WCAU every day. It is now using the electric clock meter plan of payments on refrigerators.

CHRISTMAS BUSINESS TO TOTAL 5 BILLION DOLLARS

WASHINGTON, D. C.—Figures show that retail business in the four weeks before Christmas this year may be expected to reach \$5,000,000,000, says a letter recently sent to member stores of the National Retail Dry Goods association, used by the U. S. Department of Commerce to show the importance of Christmas business to retail stores throughout the country.

Of this sum, \$2,600,000,000 will likely be obtained by department stores, apparel stores, home furnishing stores, jewelry stores, and others affected by Christmas shopping, the letter continues.

At least 600,000 people were estimated to have been added to the staff of retail stores to care for this increased business, not to mention the thousands handling the extra freight, mail and express involved.

"The extra compensation paid for the Christmas season by retail stores is estimated at \$45,000,000 and Christmas buying will thus be shown to have a definite place in the business structure... continuance of the gift-giving custom will be properly called a distinct aid for the relief of present conditions of the unemployed," the letter concluded.

NORGE DEALER SHOWS 570% SALES GAIN FOR 1931

CANTON, Ohio—An increase of 570 per cent in his sales of Norge refrigerators here for the year 1931 over 1930 figures has been reported by R. R. Dorrance, manager of the Suburban Gas and Electric Co.

Dorrance who, in addition to his Norge line, sells compressed gas cylinders and electric appliances, has moved his storeroom at 1103 Cherry Ave., N. E., into larger quarters at 504 Market Ave. N.

CURTIS TO HANDLE NORGE SALES IN DES MOINES

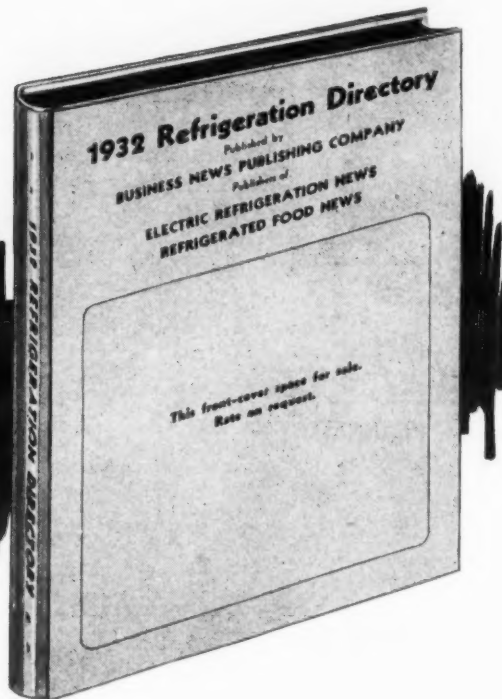
WATERLOO, Iowa—Virgil B. Curtis, sales promotion manager of Norge refrigerators for the Adams Co., Inc., in Iowa for the last year, has been transferred to Des Moines, where he will take over the office management and be in charge of city sales.

NORTON MADE RETAIL SALES MANAGER OF RAY THOMAS, INC.

LOS ANGELES—Ed Norton, former sales manager and buyer for Barker Bros. household and refrigeration department, has recently been appointed retail sales manager of the metropolitan district for Ray Thomas, Inc., Los Angeles distributor for Westinghouse.

CONNECTICUT FIRM FORMED

MERIDEN, Conn.—F. A. Noack has opened the Meriden Electric Utility Co., featuring Norge electric refrigeration. L. C. Webber is service manager.



Make sure of your facts, figures and names in 1932

Most bargain sales are held after the product has been on the market for some time. But here's a sale before the product is manufactured.

After publication, the 1932 REFRIGERATION DIRECTORY will cost \$2.00—a bargain price in itself. But right now, in order to have some indication of how many copies over the guaranteed minimum of 10,000 we should print, we are offering the DIRECTORY at just one-half price—\$1.00 per copy, cash with order.

What easier way do you know to pocket a dollar? You will want a copy of the DIRECTORY for your own use, no matter what your connection with the industry may be. Its 300 and more pages, loaded with statistical and industry information, will make the DIRECTORY one of your most valuable tools. It will save you time, save you money; give you the facts, figures and names you want when you want them.

Declare this 100% dividend for yourself today by using the coupon below to order your copy of this handy reference book.

BUSINESS NEWS PUBLISHING CO.
550 Maccabees Bldg., Detroit, Mich.

Why You Will Want a Copy of the Directory

1. Distributors and Dealers

Your office will not be completely equipped without a copy of the DIRECTORY always at hand. It will give you wholesale and retail sales statistics; complete alphabetical listing of all manufacturers; complete trade name listing; complete classified listing of all manufacturers of equipment, parts, tools, supplies and materials; complete geographical listing of all sources of supply near you. You will find a dozen different uses for the DIRECTORY.

2. Salesmen

So complete will be the DIRECTORY's picture of the industry, you will want a copy in your portfolio at all times. Think of the hundred and one questions constantly coming up. The DIRECTORY will answer them for you—help you to handle individual cases, supply requested information, show what special accessories are available, give you facts and figures you need in your selling. Invest \$1.00 in your work by ordering your copy today at the pre-publication price.

3. Servicemen

As a reference guide, the DIRECTORY will be invaluable to you. Whenever you run up against special cases in your maintenance and repair work and need some particular part or supply you do not carry in stock, the DIRECTORY will tell you where you can get it. You will have no trouble in finding the information you want for the DIRECTORY will be carefully indexed and cross-indexed. Have a copy available as soon as it comes off the press by sending in your order today.

4. Engineers, Production Men

Here is a convenient handbook, 6x9 inches, cloth-bound, that will merit an accessible location on your shelf of reference books. You will wonder how you kept shop without it. It's classified listing of sources of supply alone will be worth more than the full price of \$2.00 to you. Recall how often you have wanted to know something about the industry right at the moment. Make sure you will have a copy handy by taking advantage of the special \$1.00 price.

5. Sales, Advertising Executives

The DIRECTORY will be the recognized register of all trade-marked refrigeration products. Whenever you are naming a new product, accessory or device, you will be glad to have the DIRECTORY's complete listing of trade names to check against. And you will find the statistical section invaluable, too. You will want a copy of this handy book for your personal use. Have one mailed direct to your desk by sending in your order today.

6. Suppliers

In the DIRECTORY you will find your best mailing lists brought right up to date. And then think what a great help the Geographical section will be to you. Whenever you send a salesman into a particular city or territory, a time-saving calling list is all prepared for him—including personnel and telephone numbers. There is no question but what you will want a copy of the DIRECTORY. Why not order it now and save \$1.00?

This attractive pre-publication offer of copies of the DIRECTORY at \$1.00 expires the day the book goes to press. Then we will know how many copies to print to meet the requirements of the industry and the price will be \$2.00 per copy. Put your order into the mails today—make it pay you and help us in serving the industry.

now at
 $\frac{1}{2}$ price

This Special DIRECTORY Coupon will save you \$1.00 per copy

Business News Publishing Co.,
550 Maccabees Bldg., Detroit, Mich.

Enclosed is \$..... for..... copies of the 1932 REFRIGERATION
DIRECTORY at the pre-publication price of \$1.00 each.

Name

Address

City and State.....

RETAIL STORE CREDIT RUNS UP TO 2 YEARS

WASHINGTON, D. C.—The length of time accounts are allowed to run by retail dry goods and clothing stores before they are closed or placed in the hands of an attorney varies from 60 days to two years, according to a recent study by the U. S. Department of Commerce.

Most of the replies to the question were between three and six months, however. The majority of the stores permit an unpaid charge account to run 60 days before "dunning" the customer, but this also varies from 30 days to 120 days, depending on the individual customers.

Ninety per cent of the stores covered by this survey stated that they were at this time using greater care than before in granting charge-account privileges to applicants. In only five per cent is there greater liberality in this connection.

Seventy-one per cent of the retailers reported that payments by charge account customers were slower now than in previous years. Eighteen per cent noted no difference, and 11 per cent reported better collections than formerly.

Refrigerator Serves Kitchen, Bakery

SHEBOYGAN, Wis.—A salesman from the office of the Wisconsin Public Service Corp. sold an Electrolux refrigerator to do double duty recently.

Mr. Hirsch, 1128 Eighth St., knew that his wife needed a new refrigerator for the kitchen, and he also wanted something to cool the yeast which he uses in his small bakery. What should he buy?

Instead of buying two refrigerators, Mr. Hirsch and the salesman quickly decided that if Mrs. Hirsch's box were large enough, she would probably leave room in it for Mr. Hirsch's yeast. The large model EA-10A, called the "Chateau," is now installed in the Hirsch kitchen.

FORMAL OPENING PLANNED

EVERETT, Wash.—The Nelson Appliance Co., recently announced as Snohomish County agency for Frigidaire, plans a formal opening of its remodelled store building in the near future.

C. S. Nelson and L. G. Zipparian are proprietors of the company.

Industrial History Proves Quality All-Important, Lindsay Avers

By Harvey Lindsay
President, Dry-Zero Corporation

THERE'S nothing more wonderful about American life today than this: It is Monday night in New York. Around a Broadway night club table are gathered a famous Gotham wit and half a dozen friends. He tells a comic story—a new one. It draws a hearty laugh, then and there in New York; on Wednesday it's in Chicago; on Friday it's drawing chuckles in Los Angeles, and by the following Tuesday it's an old story up in Seattle.

Bad news travels even faster. You, yourself, have witnessed how quickly the news of a business institution's troubles spread, how outsiders know that a firm is in difficulty almost before its own officials do.

In this strange phenomenon there is, I think, a warning to the electrical refrigeration industry, or rather to each of its members.

Two Development Periods

Every industry passes through two phases before it settles into its final groove. The first, of course, is the period of struggle during which the public is gradually sold upon the industry's product. Here the pioneers fight a frequently discouraging battle to win public approval and confidence.

At last they succeed, and with success comes the second period. The industry booms. Newcomers flock into the field. It seems, for a while, that there is business enough for all. But soon competition sharpens; prices begin to slide. For a time it appears that price alone is to rule. Quality appears to be almost a secondary factor in sales.

The Story Travels

Then the picture begins to alter. The shift, at first, is scarcely noticeable, but gradually it spreads. A new year rolls around and finds the scene entirely changed. Where once there were dozens of manufacturers, only a few remain—the ones that have clung, at times with seeming futility, to an ideal of quality.

What has happened? The story has traveled from New York, to Chicago, to Los Angeles. The boys who backed

price against quality have been discovered; word of their doings has sped from mouth to mouth from coast to coast. They are licked—and there is no such thing as a "comeback" for them.

Automobile Experience

The picture I have drawn is from fact, not theory. Recall what has happened in the automobile field. Of the manufacturers who flourished 10 years ago, how many are alive today? Sadly few. Here is one case that illustrates with tragic clarity how swiftly news of a product spreads.

The car was the Mitchell. A large and potent advertising campaign was planned to launch a new model. The campaign was a bulls-eye. Orders poured in as they never had before. Soon the company was on the road to great success. Then, without warning, the bottom fell out. The car, itself, was a failure.

By hundreds, they were returned to the factory. Every new sale was a mortal blow, for it only helped speed the word from tongue to tongue that the Mitchell was a flop. Mitchell engineers, seeking greater economies, had skimmed too much. There was no chance of recovery, for reputation, once ruined, cannot well be rebuilt.

Here is as great a tragedy as ever crossed the modern business stage. Had the fatal mistake of skimping here and cheapening there not been made, the Mitchell today might well be one of the great leaders in the automotive field. It was headed that way when price conquered quality in the minds of those guiding its destinies.

Parallel Refrigeration Field

Mitchell's career came to a close at a period in the life of the automobile industry that parallels the present day in the electric refrigeration field. Here an industry is flowering in the midst of its boom period despite the apathy of general business. While older lines suffer, the demand grows steadily for electric refrigerators. There is, as yet, no sign of a let-down.

Perhaps the golden age will continue for several years, perhaps not so long. But, inevitably, the period of elimination must come. When it does, the same rules that applied in the great automobile struggle will apply, and from these rules there will be no appeal. In the battle many factors will play a part.

Reputation Important

Dealer organizations built up in past years and the cumulative effect of sound advertising will be in the front line. Price and quality will bear their share. But back of all these will be another factor, one that may be either friend or

foe. This factor is the reputation which has grown around the refrigerators themselves during the years they have been in service.

This reputation is more powerful than any that can be built by advertising claims and sales arguments. A refrigerator that has done its work well in a home is the stoutest argument its manufacturer can muster. If it has failed, its manufacturer's products are doomed so far as that family and that family's friends and many of its friends' friends are concerned. There can be no doubt that that refrigerator's reputation will travel just as did the Broadway wit's story and the bad news about the Mitchell.

Performance of refrigerators sold today, then, will have an important bearing on sales two, three and 10 years hence. It will be particularly significant when this fact is considered: Families will buy refrigerators just as they buy automobiles.

The first refrigerator is likely to be a small, inexpensive model. In the course of a few years the family grows, the father's earning power increases and the family returns to market in search of a larger refrigerator. Perfect satisfaction will dictate a purchase of the same make as the first one. Otherwise—another make gets the sale.

Another angle is this. Today the efficiency of an electric refrigerator in converting electric current into useable cold and then holding that cold is not a major factor. The industry is too young to have developed in the public's mind an exact conception of the amount of electric current a certain size cabinet should use.

Electrical Consumption

The situation is somewhat the same as it was in the days when it was sufficient that an automobile run regardless of gasoline consumption. But just as "gasoline mileage" became a major talking point in auto sales, so will electrical consumption become one in the electric refrigeration field. It is a subject that the individual boasts about (and tells his friends) or bemoans (and, then also, he tells his friends). No subject is better suited for tongue to ear transmission.

In the performance of electric refrigerators—as every refrigerator man knows, and as the public is coming to realize—there are two prime factors, the heat-absorbing unit and insulation. Although I am naturally interested most in the latter, I feel sure that prejudice is not guiding me too much when I say that too little attention is being given to insulation, both as a factor in performance and as a sales argument.

Adequate Insulation Needed

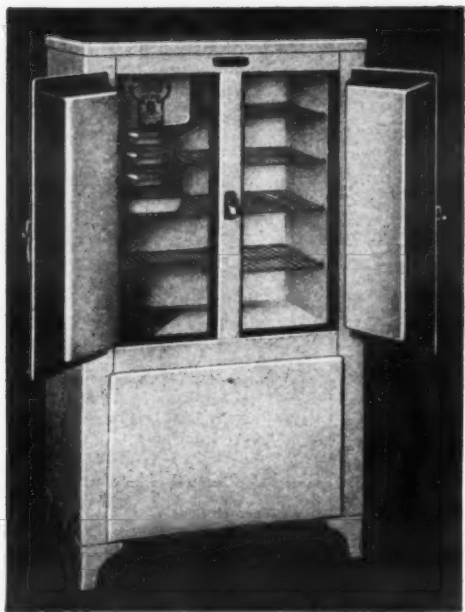
Without adequate insulation, no refrigerator can be operated economically. Obviously, economy is in direct proportion to the efficiency of the material, not only when it is new, but also after years of service. In fact, the continued efficiency of the material is perhaps even more important than its initial effectiveness, since a householder who finds his electrical bill gradually rising will have his attention brought to a sharp focus on this glaring fault.

Other Factors Important

I have mentioned the part I believe insulation will play in the future sale of an electric refrigerator. Other factors bearing upon refrigeration efficiency should be given just as much thought.

Perhaps I have presumed too much in discussing the sales problems that may confront the electric refrigeration industry within the next few years. However, I believe that a Mitchell failure retards advancement in any industry. We all prefer to have no stories of failure winging their way from coast to coast in record-breaking time.

KING-KOLD Refrigeration



PERFORMANCE YOU CAN SELL WITH CONFIDENCE

As a KING-KOLD distributor or dealer, you can sell electric refrigeration with confidence:

1. Confidence in the product.

KING-KOLD comes to you on even terms with the best and latest in electric refrigeration. It does not tax you with the high cost of experimental work in the field. It enables you to sell all that can be asked of electric refrigeration . . . quality . . . silence . . . dependability . . . low operating cost . . . at an amazingly low list price.

2. Confidence in the manufacturer.

KING-KOLD is built and guaranteed for three years by a company universally recognized as an industrial leader. Its manufacturing experience, business integrity and reputation for fair dealing cover a period of nearly 40 years.

Desirable territories are open for distributors who can qualify. Wire, write or phone for our proposal.

ILLINOIS MOULDING CO.
23rd. at Western Avenue Chicago

Private Brands. Inquiries are also invited from large sales outlets interested in marketing electric refrigerators under their own trade names. Our preparation for this type of work and our experience in serving large companies enable us to provide an unusually economical, efficient service in private label work.

Important Features of KING-KOLD Refrigeration

- New quality in cabinet design, steel construction, and masterful workmanship.
- Porcelain fused on A-mco iron interior
- Dry-Zero Insulation
- Chrome-plated hardware, Two-tone
- Movable type, heavy flat bar shelves
- Well-balanced legs of removable type
- Massive doors
- Stainless sealing gaskets
- Locked unit compartment
- Simple dust-proof, trouble-proof unit
- Quiet, vibrationless operation
- Maximum capacity per cabinet size
- Nationally known sturdy motor
- Large frozen dessert compartment
- Porcelain cooler
- Constant cold
- Plug-in installation
- 10 stages of temperature control
- Automatic safety control
- Fast-freezing compartment
- Two-purpose tray

Tells the Temperature also how long the motor runs

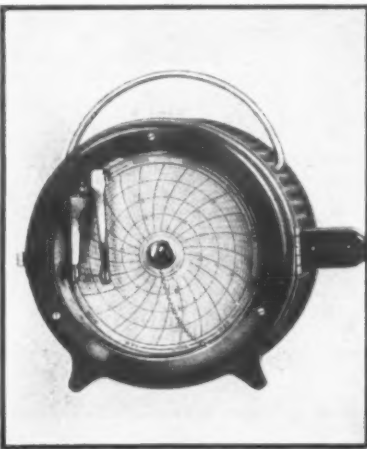
IF the housewife complains about the electric refrigerator you sold her,—if she says the motor runs too long and too often, or the temperature isn't cold enough, don't argue. Just install BRISTOL'S Model 144T Time and Temperature Recorder and see what the facts really are.

This handy little instrument is mighty helpful in adjusting complaints amicably and satisfactorily. It gives a continuous 72 hour record of temperature and motor performance that cannot be disputed or denied.

Handy, compact, no fuss or bother

THE BRISTOL COMPANY • WATERBURY • CONNECTICUT
Branch Offices: Akron, Birmingham, Boston, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco

BRISTOL'S
TIME AND TEMPERATURE RECORDERS *for Refrigerators*



BRISTOL'S Model 144T Time and Temperature Recorder, for recording both refrigerator temperature and "on" and "off" motor periods.

to install, it will soon prove an indispensable aid in your servicing work. Write for Leaflet No. 381



Balsam-Wool
Sealed Slabs
✓ ODORLESS
SANITARY
Completely satisfactory
Refrigerator Insulation

WOOD CONVERSION COMPANY
Industrial Sales Offices:
CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg.
Detroit, 515 Stephenson Bldg.
San Francisco, 149 California St.

DEALER STAGES HOME ECONOMICS SCHOOL

PHILADELPHIA—Stern & Co., household furnishers of 706 Market St., staged a demonstration of household economics through electric refrigeration in the central space of its main floor recently.

The demonstration was sponsored by Trilling & Montague, wholesale distributors of Norge refrigerators; J. M. Golden was in charge, and Edith C. Ault, hostess for Trilling & Montague, presented the demonstrations.

The new "Electric Iceman," an electric clock combined with the 25-cents-a-day deposit feature, although the clock is entirely separate from the refrigerator, was brought out, as was the Norge rollator. Five models were on display.

Such foods as salads of various types, fruit, cracker and olive delicacies, mousse and jellies, and fruit or tomato juice cocktails were prepared. A properly set party table was displayed, and good usage and economy were outlined for prospective hostesses.

A window display of four Norge models, an operating rollator, "Electric Iceman" clocks and explanatory window cards, helped draw crowds to the store. Stern & Co. handles Norge, Mayflower, Majestic, and M. & E. refrigerators in its virtually rebuilt eight-story furniture store.

ATTEMPT TO REDUCE RADIO ADVERTISING TO BE MADE

WASHINGTON, D. C.—Efforts to reduce greatly the amount of radio advertising now on the air will be made by Representative Davis of Tullahoma, Tenn., ranking minority member of the House of Representatives committee on merchant marine and fisheries, during the last Congress, he stated Dec. 5.

Mr. Davis said that in his opinion, the Federal Radio Commission could have taken some action before this time under powers given it by the Federal Radio act to reduce the amount of radio advertising broadcast, but said that the commission had "fallen down" on its job in this respect.

FRIGIDAIRE DISTRIBUTOR SETS NOVEMBER RECORD

SIOUX CITY, Iowa—A new November sales record was established by the sales organization of D. K. Baxter Co., Frigidaire distributor for this section, when salesmen made a drive to carry out a "spring dating" campaign.

"Our salesmen sold more business this November than during any November in the history of our business," D. K. Baxter, president, announced to *Sioux City Tribune*, which carried a streamer front page story on the achievement.

The Frigidaire "spring dating" plan, now being used by Frigidaire representatives throughout the country, provides for a normal down payment and no other payments until May.

The "spring dating" plan is Frigidaire's answer to a common objection of prospects today—"We've decided to wait until spring."

FRIGIDAIRE TO BE SHOWN IN GENERAL MOTORS SHOW

CANTON, Ohio—Special emphasis on Frigidaire units will be made at the General Motors electrical appliance exposition to be held here in the spring, it has been announced. The company will exhibit all its products at Land O'Dance, the largest available downtown exhibition hall.

Daily broadcasts will be made during the week of the show over Station WHBC, and an amplifying system will be installed in the building itself during that time. Exact date of the show has not yet been announced.

DIRECT MAIL CAMPAIGN TO CLOSE CONTEST

MANSFIELD, Ohio—Final punch will be put in the Westinghouse salesman's "On to Mansfield" campaign by a new direct-mail service sent out through the distributors.

This "selective selling service" is to be mailed to each salesman's best 50 prospects, with his name and address imprinted thereon.

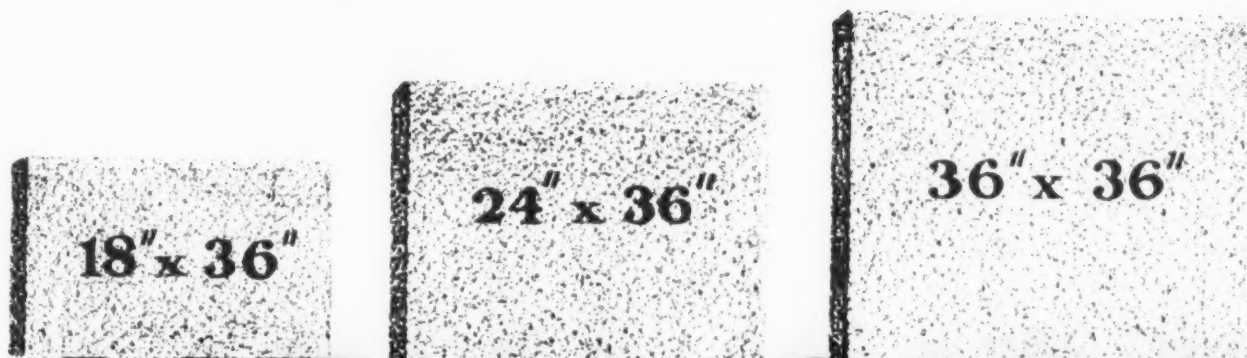
It consists of three mailing pieces, and is designed to "sell one customer while you sell another."

FRIGIDAIRE WATER COOLERS BOUGHT BY LEGISLATURE

RICHMOND, Va.—Virginia's orators, all prepared for the 1932 session of the legislature, found that drinking water facilities were not adequate to slake justified thirsts, and so called in Henry P. Fuller, salesman for A. M. Gathright Co., Frigidaire distributor.

Two bottle type Frigidaire water coolers were installed, one for the Virginia House and one for the Senate.

NOW you can get Armstrong's Corkboard in



3 NEW SIZES

IMPORTANT TO MANUFACTURERS OF REFRIGERATING EQUIPMENT! Armstrong's Corkboard, standard insulation for more than a quarter of a century, is now offered in three new-sized boards!

Armstrong's Type LK Corkboard is available for refrigerator insulation in sizes of 36" x 36", 24" x 36", 18" x 36", as well as in the standard 12" x 36" board. These 4 sizes offer a complete range to cover every insulation need.

More good news! You can now buy Armstrong's Type LK Corkboard cut to size to fit your own requirements, at an economical cost. Various thicknesses, from one inch to six inches, are available. If you prefer to have your insulation sealed in paper, it can be furnished that way, too.

These larger corkboard sheets result in less handling, speedier production, and lower labor costs. In addition to the three new sizes, Armstrong's Type LK Corkboard has a lower coefficient of thermal conductivity and lighter weight than standard corkboard.

Armstrong engineers will gladly tell you more about Armstrong's Type LK Corkboard. Let them show you how its light weight, low coefficient of thermal conductivity, moisture resistance, strength, and rigidity combine to give permanent insulating efficiency. Or send for samples and complete data. Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

Armstrong's
TYPE LK Corkboard Insulation
Efficient and Practical Insulation
for Refrigerating Equipment

*and cut
to measure,
too!*

Armstrong's
(A)
Product

TEAR THIS OUT!

✓ *Memo*

CHECK the nearest office. Get the phone number from the local directory. Then call for further information about the new sizes of Armstrong's Type LK Corkboard.

Albany, N. Y.; Atlanta, Ga.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Milwaukee, Wis.; Minneapolis, Minn.; New York, N. Y.; Omaha, Neb.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Syracuse, N. Y.; and in Canada—Montreal, Toronto, Winnipeg.

Armstrong representatives are located in the following cities: Baltimore, Md., John R. Livezey; Los Angeles, Cal., Gay Engineering Corporation; New Orleans, La., H. T. Steffee; Philadelphia, Pa., John R. Livezey; Portland, Ore., Gillen-Cole Company; San Francisco, Cal., Van Fleet-Freear Company; Washington, D. C., John R. Livezey.

LITTLE STORIES OF INTERESTING
PEOPLE
IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

By George F. Taubeneck

LITTLE STORIES OF INTERESTING
IDEAS
IN THE REFRIGERATION INDUSTRY

Werner Schoop

Tall, young, gazing with unwavering eyes, dressed in handsome clothes tailored in Europe, speaking with the cosmopolitan accent of one who talks easily in English, French, German, and other Occidental tongues, Werner Schoop of Zurich, Switzerland, was a recent visitor in this office.

Mr. Schoop has the title of European Director for the H. M. Robins Co., and we are told that he sells about 50 per cent of all the Copeland refrigerators exported into Europe.

Most of his refrigeration business is commercial, he declares. And although many commercial installations are being made, he thinks that the market has just been scratched.

In illustration he tells about walking into a famous Paris cafe. It's almost impossible to get out of this cafe without paying at least a ten-dollar check. The proprietor is reputed to make a small fortune out of his business every year. Food is excellent, service good, everything of the best.

Curious, Mr. Schoop asked what make of refrigeration was used. After being forward passed from the waiter up the line to the proprietor, he was told that this famous cafe had no electric refrigeration equipment.

The proprietor had heard about electric refrigeration, would like to try it, but nobody had ever called on him who knew anything about it!

The deal was quickly consummated.

Explosions

Overtures toward cooperation between competitors in Europe, according to Mr. Schoop, are always duds.

European dealers fight, claw, bite, and scratch to make a sale, declares this Copeland representative.

Even after the sale is made the battle rages merrily on. Likely as not, a losing salesman will go to the purchaser and warn him that the machine he bought is liable to explode any minute!

Nothing that savors of Barnum will work in selling specialty articles in Europe, observes Mr. Schoop.

On the other hand, European salesmanship could use a little bit of Gus Mayer and his 25 plan. The big job is that of getting salesmen to make calls. Too many people tell them it can't be done.

Competition includes not only Ameri-

can refrigerators shipped abroad, but machines manufactured by companies scattered throughout Europe.

Some American manufacturers, notably Merchant & Evans, ship only the units abroad, and install them in European cabinets.

They Read the News

Mr. Schoop agrees with Baron Parilli, who sells Kelvinators over there, that ELECTRIC REFRIGERATION NEWS causes them a lot of trouble.

Subscribers abroad read the paper carefully each issue, know what is going on in the States, hear about the new models, judge the relative importance of the various manufacturers by their representation in the news and

advertising columns, and listen to no bunk, according to Mr. Schoop.

He cites the case of a distributor he almost had lined up. Schoop came around one morning to get this fellow's signature. When he arrived the prospect waved a copy of the Sept. 9, 1931, issue under Schoop's nose.

"Look at this," he cried. 'Frigidaire Reduces Prices on All Units.' And what, pray, is Copeland going to do about prices?"

That headline apparently caused something of an uproar. Not even the Frigidaire organization in Paris had heard about the new prices.

Schoop claims that European refrigeration dealers and distributors study "The Expansion Valve" carefully, for it gives them ideas about the men with whom they are doing business, and the character of the organizations they are representing.

Europeans are often more interested in the men-at-the-helm than in the merits of the product. Good executives, good concern, good product—is the direction their reasoning takes.

Metallo Wood

Mr. Schoop finished his education at the Massachusetts Institute of Technology. His father, Dr. M. U. Schoop, is the inventor of a process for spraying liquid metals on wood.

Leaving the nozzle of the elder Mr. Schoop's device at a velocity of 800 meters per second, the metal particles penetrate deeply into all pores and depressions in the wood.

Wood plates can be covered on one or both sides with this metal spray, after which they can be cut, bent, nailed, and sawed. By using a sand blast in conjunction with tin or celluloid stencils, decorations can be applied.

This "metallo wood" has been considered for use in the construction of refrigerator cabinets.

A Good Friend

One of the Grand Old Men of this young industry was E. E. McMullen, Norge distributor for Missouri, whose death is reported in this issue.

Readers of this kolyum will remember that it was he who nursed the Norge compressor along until Howard Blood saw it and took it home with him to Detroit Gear & Machine. Mr. McMullen was also the first Norge distributor.

He was hale, hearty, human, and honest; he will be missed.

Not long before he died he sent this appreciative letter to ELECTRIC REFRIG-

Salesman Sam Returns



V. E. "Salesman Sam" Vining, who has been away from the firing line since resigning as sales manager for Servel last September, is now a member of the new Majestic sales staff.

ERATION NEWS. We reprint the letter with considerable pride:

Norge Company of Missouri
4000 Laclede Ave.
St. Louis, Mo.

Nov. 6, 1931.

Editor:

The ELECTRIC REFRIGERATION NEWS is, without a doubt, the most informative trade paper that comes to my desk. I go out of my way to recommend it to those who are looking for such information as ELECTRIC REFRIGERATION NEWS prints.

E. McMULLEN,
President.

Old King Cole

G. E. headquarters men claim that Rex Cole of New York City is the world's largest distributor of electric refrigerators. Yet he ranked eleventh among G. E. distributors in the recent Monitor Top Election Campaign.

This becomes understandable when one is informed that his quota was bigger than the combined quotas of the next two ranking distributors of General Electric refrigerators.

He went over the top of his mammoth quota by several thousand refrigerators.

Under the leadership of likeable Paul Hichborn, Cole's retail salesmen closed the contest with a sales total of 2,400 units, 70 per cent of which were sold through cold canvass.

On the last day of the campaign Hichborn's men delivered 171 orders. At that they lost to Massimi's apartment house crew—which meant that Hichborn paid a \$1,000 bet.

Rex Cole delivered 644 electric refrigerators on the final day of the contest.

And that, claims the General Electric refrigeration department, is "more refrigerators than were ever delivered by anybody else in one day in the history of the entire world."

Bring Out the Mustache Cups

Retail salesmen for General Electric refrigerators in Reading, Pa., working under the direction of N. K. Ovalle, G. E. distributor in Harrisburg, recently signed the following resolution:

"We, the undersigned, have on this date reached an agreement that from Nov. 30 we will not shave our upper lips until we have secured a firm order for at least one General Electric refrigerator. We faithfully agree to abide by the above agreement, and hereby sign."

The manifesto bears the signatures of J. E. Coyne, P. C. Seiger, C. A. Gruver, J. J. Conway, F. E. Lenning, W. J. Atkins, H. G. Adams, and M. R. Millard.

President Dunning

Chief clown of the camp was A. S. Dunning, Duluth G. E. distributor, at Association Island's Camp Refrigeration last August.

His "my pa-a-l" cry (ending on a rumbling sub-bass note) was taken up by the entire gang. He joined the camp band at once. Of the droll, lugubrious variety, his funmaking was original and spontaneous.

And here he is president of Refrigerania. To prove that his sense of humor is still in the ascendancy, however, we quote this telegram following the announcement of the results of the contest:

1931 NOV. 28 PM 1:15

D30 47—DULUTH MINN 1145A 28
P. B. ZIMMERMAN—
ELECTRIC REFRIGERATION DEPT.
GENERAL ELECTRIC CO.
HANNA BUILDING

WE ARE JUBILANT AND ALMOST OVERWHELMED BY THE GOOD NEWS STOP I KEENLY RECOGNIZE THE RESPONSIBILITIES OF THE GREAT OFFICE TO WHICH I HAVE BEEN ELECTED AND SHALL ENDEAVOR TO REPRESENT THE BEST INTERESTS OF ALL THE PEOPLE ALL THE TIME STOP AND WHAT A PEOPLE—

A. S. DUNNING.

In the "Ballot Box," a campaign "pep" mailing piece issued by George Straight et al, was printed not only Dunning's wire, as quoted above, but this piece of hilarious face-slapping—with which the defense rests:

Salem, Ohio,
Nov. 24, 1931.

Mr. Dan H. Willis,
421 Ohio Edison Bldg.,
Akron, Ohio.
Dear Boss:

Well, I seen by the paper where this here guy Smith wins the election for guvener.

Now Boss I wants to protest this yere lexion on acct this hyena Smith didn't play fair.

We all got together as you no, at the beginning of the campane and agreed to putin a full days work every day now didn't we? Yeah—we did, Smitty too. But here's the catch when night time come and us boys was restin up down at the pitchur show or pool room gittin reddy for a big day tomorrer, ole physic face Smith was out workin and I kin prove it and it aint fare and further more a guy like him, the louse, what works both nite and day aint ought to be allowed in nobuddy's contest for nuthin. Me and my gang suggests to you that you don't give him no prize money at all, but give the low-life cock roach a \$150 worth of alarm clocks so he'll no when to quit for the day.

Unsuccessfully yours,

R. C. CAMERON.

His Mark (X)

P. S. Just discovered a fly has did me dirt. We was workin the 2.5 (Two and five-tenths) plan insted of the 25 plan

SIDE GLANCES - - By George Clark



"Isn't it romantic, dear? As soon as I sell a dozen more refrigerators we can get married."

What Bill Found in Hawaii



When Bill Seroy, Pacific Coast representative for Mayflower refrigerators, went to Hawaii, he found that prospects over there looked like this.

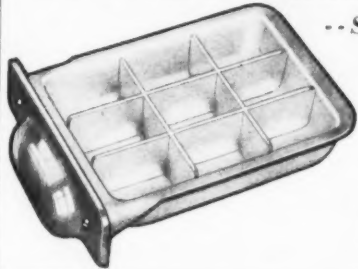
BUYER'S GUIDE

Manufacturers Specializing in Service
to the Refrigeration Industry

SPECIAL ADVERTISING RATE (this column only)—\$12.00 per space.
Minimum contract—13 insertions in consecutive issues.

STOCK PARTS LOWER COSTS

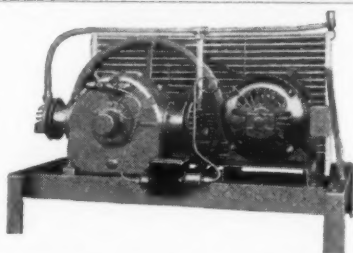
--Speed Up New Model Production



Hoosier Stock Parts save retooling expense, eliminate profitless small operations, stop delays. We ship from stock to meet your production schedules. Send us your specifications for quotation on stock or special designs.

HOOSIER

LAMP & STAMPING CO., EVANSVILLE, IND.



BAKER Commercial Refrigerating Units

The Profitable Answer to Every Refrigerating Need
Distributor's Inquiries Invited

Baker Ice Machine Co., Inc.

Manufacturers of Ice and Refrigerating Machinery for more than twenty-five years

1518 Evans St. Omaha Nebr.

A complete range of sizes for Methyl Chloride, Air or Water Cooled Condensers, Standard or Heavy Duty Types

ELECTROCHEF

The Modern Electric Range

Demands Attention Wherever Displayed

Distributors and dealers have an opportunity to sell this sensational new Electric Range. Many thousands in use—over 90% of users enthusiastically recommend it to their friends.

ELECTROCHEF IS FAST - ECONOMICAL - MODERN

ELECTROMASTER, INC.

1803 E. Atwater St. - - - Detroit, Mich.

Hard and Soft

Rubber Parts for Electrical Refrigerating
Ice Cream Cabinet Parts, including

Lid Collars, Sleeves, Brine Hole Stoppers, etc.

Specializing in Rubber Parts manufactured to customer's specification

Dryden Rubber Company

1014 S. Kildare Ave. :: Chicago, Illinois

SITKA SPRUCE SPECIALISTS

Enormous capacity, complete manufacturing and special drying facilities enables us to guarantee:

To deliver Sitka Spruce at less than 9 per cent moisture content

To eliminate large lumber inventories at your plant

To keep you supplied at all times

C. D. JOHNSON LUMBER COMPANY

PORTLAND - - - OREGON

CABINETS

Laquered Steel and Porcelain Exteriors

Sizes stocked from 3½ to 8 cu. ft. net capacity, also built to specifications for unit installation.

Cabinets for Multiple-jobs

ILLINOIS REFRIGERATOR CO.

MORRISON, ILL.

Double Value for Readers

Here is double value in itself—52 issues of ELECTRIC REFRIGERATION NEWS at the old price for 26 issues—until January 1, 1932.

The News, published every Wednesday, is keeping in step with a fast-moving industry. Quickly and accurately it brings you the latest information on new products, new methods, new developments of vital interest to you in your work.

By using the enclosed order blank now you can get the weekly paper at the old price—an actual saving of \$1.00. Better yet, take advantage of the special \$5.00 rate for three years.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other materials recently issued.
Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Westinghouse Refrigerators

"Masterpiece of a mighty organization" is the title on a new six-page folder issued by the Westinghouse refrigerator department, advertising the De Luxe household models. Thirty-five features of the Westinghouse line are enumerated, those said to be exclusive with the make being designed by a star.

Five models are pictured in colors, with tables showing the exterior and interior finish, the equipment, and dimensions of each. The colors used in the folder are salmon, silver, blue, and brown. A sans serif type gives a modern air to it.

Mills Electric Clocks

A two-color broadside accompanied by an explanatory form letter and self-addressed postal cards has been sent out by the Mills Novelty Corp. to electric refrigerator dealers, advertising the Mills Coin Clock Plan for use in selling to homes.

The attractive kitchen clock, run by electricity, can be connected with any electric refrigerator, the broadside says. No down payment need be required of the customer if the clock is used; a quarter, deposited in the top of the clock, causes the refrigerator to run for 24 hours.

Each month the dealer calls, removes the money in the clock, and credits the customer's account with the amount he finds there. When the full retail price has been paid, he takes away the clock for use on the next refrigerator installed.

The clock is fully described in the literature, and sample advertisements featuring the coin clock plan are included.

Electrolux Fire-Eater

Full six feet tall and done in striking colors, "the Fire-Eater," new Electrolux window or floor display, is now available to dealers.

It is a cut-out showing a man dressed in bright cloth, a pelt thrown over one shoulder, dagger at his side, just about to put blazing fire into his mouth.

The accompanying card, to be placed on top of an Electrolux model, says "The fire-eater's use of flame is astounding, but not more so than the way Electrolux uses flame to make constant, automatic cold without moving parts."

Electrolux is also offering a new literature rack with "please take one" printed on it.

G. E. Sliding Shelves

The new sliding shelves with which General Electric models are now equipped are a basis for two new blue and red window cards now being used in dealers' displays.

One has the legend "Why hunt for food? Sliding shelves bring it to your fingertips," and the other "Sliding shelves make every inch of storage space count."

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Booklet on Air Conditioning

Query No. 609—"Where can the booklet, 'Research, Its Value to the Art and Industry of Heating, Ventilating, and Air Conditioning,' be secured?"

Answer—Write F. C. Houghten, director, The American Society of Heating and Ventilating Engineers Research Laboratory, U. S. Bureau of Mines Experiment Station, Pittsburgh, Pa.

Training Schools

Query No. 610—"Where are training schools in electric refrigeration located?"

Answer—Utilities Engineering Institute, 404 N. Wells St., Chicago, Ill.; National Technical Institute, 4300 Euclid Ave., Cleveland, Ohio, and School of Engineering of Milwaukee, 163 N. Wells St., Milwaukee, Wis.

Lugs To Support Shelves

Query No. 611—"Please send us the names of concerns prepared to furnish lugs used in the sides of the interior lining of an electric refrigerator for supporting the wire shelves."

ANSWER TO BACK QUERIES

Answer to Query No. 591—The Colde refrigerator, operated on the electrolysis principle, is being developed by Midland Electric Co., Indianapolis, Ind.

Answer to Query No. 585—Sneath Glass Co., Hartford City, Ind., also furnishes glass chiller ice cube storage trays.

Answer to Query No. 586—Mercury tubes for controls may also be purchased from the Minneapolis-Honeywell Regulator Co., Elkhart, Ind.

FOREIGN DISTRIBUTOR VISITS SERVEL PLANT

EVANSVILLE, Ind.—Max Alter, general manager of Messrs. Baumann, Koeliker & Co., Servel distributor in Switzerland, was a recent visitor at the Servel factories, here.

Travelling approximately 4,500 miles from Zurich, where the firm's main offices are located, Mr. Alter visited the United States for the first time. He arrived in Evansville Dec. 5.

"Electric refrigeration is enjoying favorable acceptance in our country," says Mr. Alter. "Many of the restaurants and hotels patronized by the thousands of tourists who visit Switzerland each year, are being equipped with mechanical refrigeration."

Although, like most Swiss, he speaks several different languages, including French, German and Italian, Mr. Alter also speaks excellent English. He is a native of Switzerland.

While in the United States he spent much time in New York and Chicago, since, he said, he had heard much about those two cities.

During the week spent at the Servel factories, Alter conferred with Export Manager A. F. Scherer, European representative Reginald Fawcett and G. Scott Lindsay, Servel foreign sales engineer in India.

Both representatives arrived at the factory recently for their regular home-office visit and new assignments after an absence of two years in the field.

AIR-OLA RADIO CO. WILL DISTRIBUTE ELECTROCHEFS

DETROIT—The Air-Ola Radio Co., Inc., of Huntington, W. Va., will distribute the Electrochef electric range in West Virginia and portions of Ohio and Virginia, according to Gerald Hulett, sales promotion manager of Electro-master, Inc.

The new distributor has 158 dealers selling Majestic electric refrigerators and radios.

FLEMISTER MANAGES NORGE FORT WORTH STORE

FORT WORTH, Tex.—Paul Flemister, for four years sales manager and manager of the Fort Worth General Electric office, is now manager for the new Norge-Fort Worth Co., which opened showrooms at 805 Lamar St., recently.

The opening was held from 7 to 10:30 o'clock in the evening, with salesmen on hand to explain the rollator system and to distribute souvenirs.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE is paid in advance —Positions Wanted—fifty words or less, one insertion \$2.00; additional words four cents each. Three insertions \$5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion \$3.00; additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS WANTED

TEN YEARS' merchandising electrical refrigeration. Thirty-five years old. Exceptional analytical ability. Dynamic and intensive in operations. Exceptional personal sales ability, leadership and ability to attract most successful men in industry. Now district sales manager, national organization eastern territory. Could open up 10 highest class distributors next 30 days. Now available. Box 395.

SERVICE MANAGER, experienced, capable and energetic. Six years' experience in domestic and commercial refrigeration. Accustomed to handling sales and service engineering problems, directing installation, field service, shop service, maintaining stock room and delivery. Accustomed to handling men and getting enthusiastic cooperation. References. Box 389.

REFRIGERATION expert, until recently employed with leading refrigeration corporation as manager and field engineer for Latin America, offers his services for similar position. Economical reasons induced the former employing concern to reduce export force. Advertiser is good merchandiser, has trained service and sales forces for foreign distributors and initiated commercial and household refrigeration markets and outlets. Salary according to results. Best references. Several languages. Although employed, available immediately. Box 401.

BUSINESS OPPORTUNITIES

BUSINESS OPPORTUNITY—Wanted partner who has sales ability to act as sales manager in plant manufacturing commercial refrigerating equipment. Must have capital to invest in business. Box 400.

WANTED:

New Products to Manufacture and Sell - Contract Work

New York State Manufacturer with extensive and modern machine, press shop and foundry facilities is interested in securing new products to manufacture and market. Also desirous of making machined parts, stampings, punched and pressed parts, as well as small iron castings on contract basis. Equipped to do precision work in any quantities.

Address: Box 399
Electric Refrigeration News

Only a few more days remain to take advantage of these money-saving offers before subscription rates go up.

These Offers Expire Dec. 31, 1931*

	Electric Refrigeration News (Issued Weekly)		Refrigerated Food News (Issued Monthly)		Both Electric Refrigeration News and Refrigerated Food News	
	1 Year	3 Years	1 Year	3 Years	1 Year	3 Years
1 subscription (U. S. & Possessions and Pan-American Postal Union countries).	\$2.00*	\$5.00	\$1.00	\$2.50	\$2.50	\$6.50
5 or more subscriptions, paid in advance, U. S. only, each	1.75	4.50	.95	2.40	2.25	6.00
10 or more subscriptions, paid in advance, U. S. only, each	1.50	4.00	.90	2.30	2.00	5.50
20 or more subscriptions, paid in advance, U. S. only, each	1.25	3.50	.85	2.20	1.75	5.00
50 or more subscriptions, paid in advance, U. S. only, each	1.00	3.00	.80	2.10	1.50	4.50
1 subscription (Canada)	5.00		2.00		6.00	
1 subscription (All other countries)	3.00	7.50	1.50	4.00	4.00	10.00

*Effective Jan. 1, 1932, subscription price of ELECTRIC REFRIGERATION NEWS (now issued every week) will be increased to \$3.00 a year.

GROUP SUBSCRIPTION OFFERS: These special rates are for paid-in-advance subscriptions in United States only. Charge orders are billed at the single-subscription rate, regardless of number. Papers will be mailed to individual addresses. Use separate sheet for additional names.

COMBINATION RATES: A new subscription to REFRIGERATED FOOD NEWS may be combined with a renewal or extension of an old subscription to ELECTRIC REFRIGERATION NEWS. It is not necessary for expiration dates to coincide.

BUSINESS NEWS PUBLISHING CO.,
550 Maccabees Building, Detroit, Mich.

Gentlemen:

☐ Renew subscription to ☐ Electric Refrigeration News
☐ Enter subscription to ☐ Refrigerated Food News
☐ Both of above papers

I am enclosing \$.....in form of ☐ Check ☐ Money Order ☐ Cash

Name

Attention of or Care of

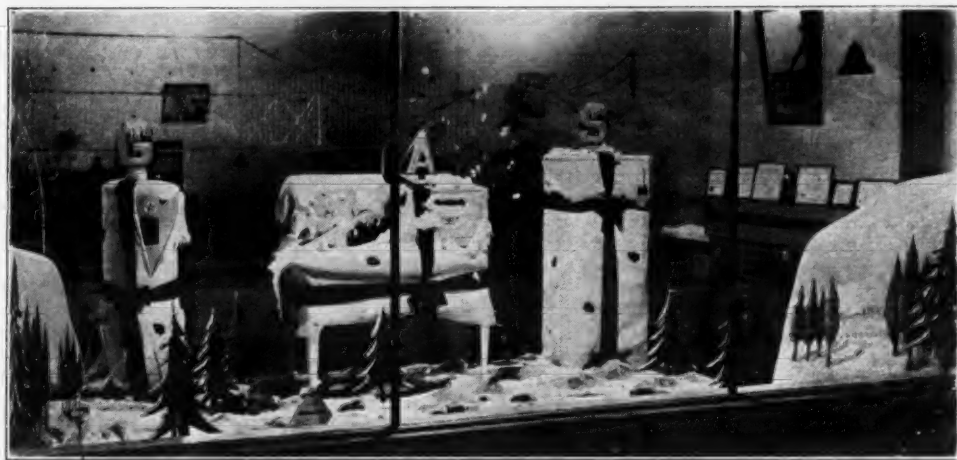
Address

City and State

Activities In Electric Refrigeration Field



Christmas spirit took possession of the Kelvinator window display used by the Denver Public Service Co. The colors of red, green, gold, and silver were used in the display.



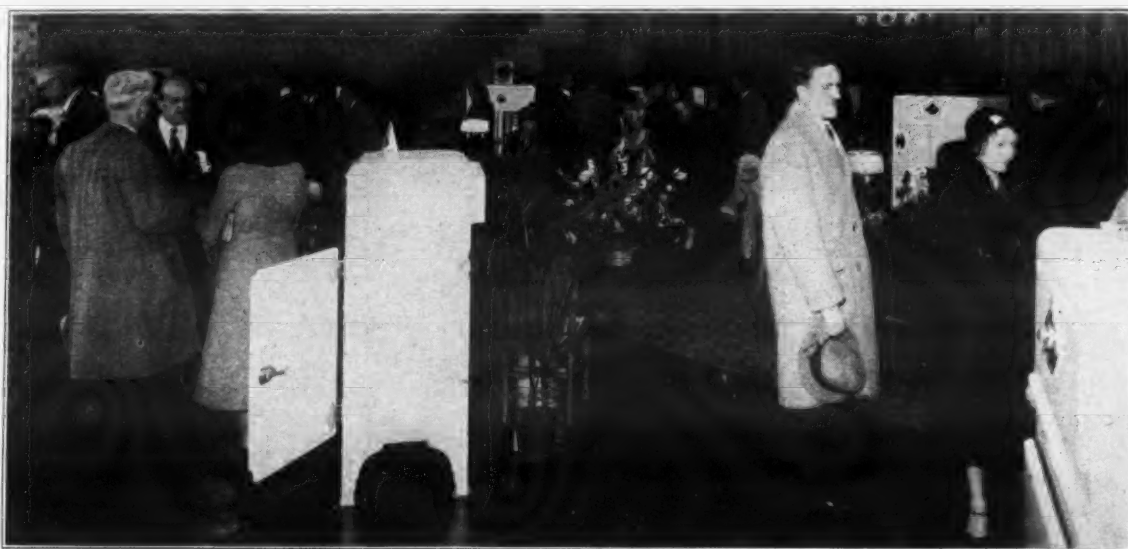
Another window with the Christmas gift idea was used at Monrovia, Calif., in presenting the Electrolux refrigerator along with two other gas appliances—range and water heater.

Joins Kelvinator



Fred G. Hulburd, former promotion manager of Silent Automatic Co., is a new member of the Kelvinator sales promotion department.

Westinghouse Display Room Opens



Ray-Thomas, Inc., Westinghouse refrigerator distributor in Los Angeles, entertained a large group of visitors at the formal opening of its new central showroom.

District Head



George M. Farrin, Chicago, has been appointed middle eastern district manager of the Gibson Electric Refrigerator Co.

Mexicans Launch Drive



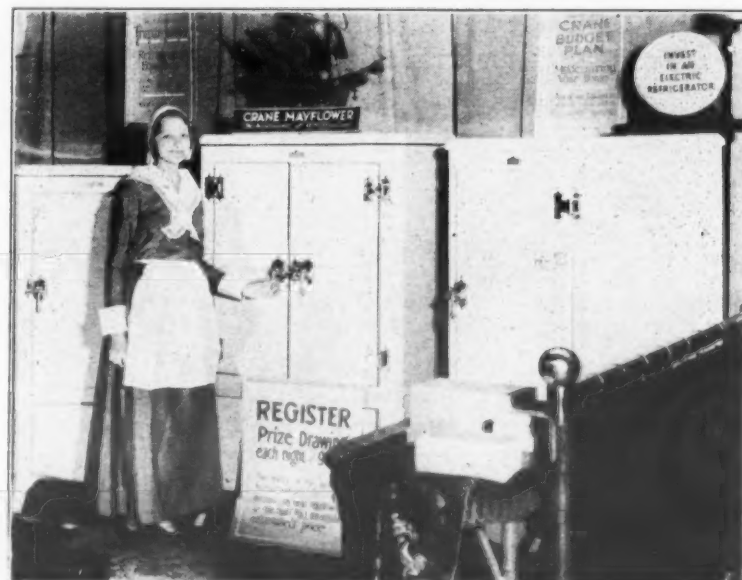
The commercial organization of the Mexican Autorefrigeration Corp., Mexico City Frigidaire distributor, launched a campaign recently.

Foreign Visitor



J. G. Alvarenga, Majestic refrigerator distributor in Guatemala City, Guatemala, is studying sales programs at Grigsby-Grunow factory.

Priscilla and Mayflowers



A modern Priscilla added atmosphere to the Mayflower electric refrigerator display of Crane Co., at the Northwest Radio and Electrical show.



A live turkey in a rustic setting was used by J. J. Pocock, Frigidaire distributor in Philadelphia, in a Thanksgiving window display.



This General Electric window display of the Iowa-Nebraska Light and Power Co., won first prize in a Lincoln, Nebr., contest.

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

ISSUED EVERY WEEK
VOL. 6, No. 15, SERIAL No. 143

Copyright, 1931, by
Business News Pub. Co.

DETROIT, MICHIGAN, DECEMBER 16, 1931

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.

TEN CENTS PER COPY
TWO DOLLARS PER YEAR

HEATING MEN ARE OPTIMISTIC ABOUT AIR CONDITIONING

Warm Air Association Sees Big Future in Home Cooling

WASHINGTON—Eventual air conditioning for a majority of America's 25,000,000 homes and the creation of a five billion dollar market for industry by the perfection of low-cost residential conditioning equipment was predicted and emphasized before the delegates to the 19th annual convention of the National Warm Air Heating Association on Dec. 3 and 4.

Convinced that artificial cooling and humidity control of air would be the next industry to rise to the heights of the electric refrigerator, automobile and radio, various speakers urged that the warm air heating industry grasp the existing opportunity and lead the way in development of mechanical equipment for household air conditioning.

"Air conditioning in the home seems sure to become a leading public interest, and with it a new industry will appear," declared Prof. Frank B. Rowley, vice president of the American Society of Heating & Ventilating Engineers, in the principal address of the Thursday morning session.

"Health and building leaders state that air conditioning will shortly take its place as a necessity comparable to electrification and refrigeration in the country's 25,000,000 dwellings," stated C. H. Landwehr, president of the Holland Furnace Co., speaking informally to the delegates at the invitation of the chairman.

Addressing the Friday morning assembly, L. R. Thompson, assistant surgeon general of the U. S. Public Health Service, emphasized the importance of exhaustive research as a means of making the air in American homes ideal for the promotion of health.

"If you seriously study this problem and give us indoor temperatures in such a way that the normal physical factors in the air are maintained as they are

ILG ROOM COOLERS PUT TO MANY USES

CHICAGO—Installations of Ilg-Kold room coolers have been made this past summer in restaurants, barber shops, furriers, drug stores, funeral chapels, executive offices, homes candy shops, clothiers, and in other places where cooled and dehumidified air was desirable, according to J. M. Frank, president of the Ilg Electric Ventilating Co., manufacturer of the equipment.

The Ilg-Kold cooler is built in two types, Mr. Frank points out, one of the cabinet style for floor placement, the other of the overhead type for wall or ceiling mounting.

The cabinet unit is designed for remote installation of the refrigerating equipment, and may be cooled either by direct expansion of the refrigerant into the cooling coils, or by circulation through them of water in which the temperature is reduced by an electrical-refrigerated water cooling system.

Cooling coils in the cabinet type consist of finned copper tubing in the lower

DAY & NIGHT DESIGNS NEW DIRECT EXPANSION COOLERS

LOS ANGELES—Water and beverage cooler models of the direct expansion type will be added to the 1932 line of the Day & Night Water Heater Co., Ltd., manufacturer of the "Day & Night" storage water coolers, the company announces.

These new models will be in production in January. The present line of flooded system coolers will be continued.

The new coolers will use the conventional expansion valve for admitting the refrigerant to the expansion cooling element. A "circulating tube" direct expansion cooling element operates within the pressure tank to increase cooling efficiency, according to the designers.

Cleveland Meeting To Discuss Air Conditioning

CLEVELAND, Ohio—Air conditioning, refrigeration in public health, machinery for industrial applications, and problems of the commercial-domestic refrigeration field will be covered at the 27th annual meeting of the American Society of Refrigerating Engineers here, Jan. 26-30.

Because the American Society of Heating and Ventilating Engineers will be meeting jointly with the refrigerating engineers, new air conditioning systems will receive special attention.

Headquarters for the meeting will be at the Hotel Cleveland. D. F. Keith is chairman of the local committee.

Inspection trips will be an important feature of the convention. The following outline of the program as it now stands gives an idea of the problems to be discussed:

Three talks will be given on the general subject of machinery for industrial refrigeration. R. C. Allen of the Westinghouse Machinery and Mfg. Co., East Pittsburgh, will discuss "Two-Speed Synchronous Motors for Compressors"; F. W. Laverty, Clark Bros. Co., Olean, N. Y., will speak on "Gas Engines for Ammonia Compressors"; and C. R. Neeson of I. P. Morris & De La Vergne, Inc., Baldwin, Pa., will report on a "Study of Oil Engine Compression Costs."

Biological aspects of thermal engi-

(Concluded on Page 2, Column 3)

STURTEVANT CO. BUYS CONTROL OF AIR COOLING CO.

Air Conditioning Corp. Is Now Owned By Boston Firm

HYDE PARK, Mass.—(Special Wire to ELECTRIC REFRIGERATION NEWS)—Complete ownership of the Cooling and Air Conditioning Corp. has just been purchased by the B. F. Sturtevant Co. of this city, according to E. B. Freeman, vice president of the Sturtevant firm. "The Sturtevant company will continue to manufacture the air conditioning apparatus for installation by the subsidiary. Executive personnel and main and branch offices of both companies remain unchanged," Mr. Freeman said.

The organization of the Cooling and Air Conditioning Corp. was originally instigated by the Sturtevant company, at which time a one-third interest was secured.

Since then the air conditioning company, furnishing specialty engineering service on air conditioning and doing all the contracting and installation work, has served as one of the major outlets for Sturtevant equipment.

New Illinois Ice Skating Rink Uses Carbondale Refrigeration

13 Miles of Steel Pipe Laid For Cooling Pipe Coils

By John T. Schaefer

CHICAGO—To equalize the friction of brine flow in all the cooling coils laid in the floor of the new Illinois ice skating rink, the three header system was employed. E. Zuckerman, engineer for the Carbondale Machine Co. stated in explaining constructional features of the installation.

Thus, he showed, brine feeding each of the loops stretching across the width of the rink to form a coil, had to flow exactly twice the length of the header system in addition to the coil travel in order to make the circuit from the feed main to the return main.

Freezing effects of all the coils are equalized with the three header system, according to Mr. Zuckerman. Headers vary in size from four to eight inches, depending on the brine flow they must carry.

On top of the cinder sub-base of the rink was first placed a concrete slab covering the entire surface. Then creosoted sleepers, or screets, measuring 1 1/4

(Concluded on Page 2, Column 1)

Students at University Now Skating on \$340,000 Rink

By Elston D. Herron

URBANA, Ill.—As a new step in its policy of "athletics for all," the Athletic association of the University of Illinois has opened here this season the largest ice skating rink in the United States, erected at a cost of \$340,000, and involving the use of a great outlay of refrigeration equipment.

The new rink is 126 ft. wide, and 193 ft. long, and furnishes a skating area of 24,440 sq. ft. Installation of all refrigerating machinery was supervised by Prof. H. J. Macintyre of the university department of mechanical engineering, specialist in refrigeration.

The ammonia system is employed in cooling the calcium chloride brine which flows through the 14 miles of pipe embedded in the upper concrete slab of the arena.

A 34-in. diameter drum, having a 3,000-lb. capacity, is employed for storing the liquid ammonia. The tank is equipped with float valves which regulate the amount of liquid ammonia passing into the brine cooler.

This permits maintenance of a constant supply of the liquid in the brine cooler, irrespective of the load due to the number of skaters on the rink, and furnishes automatic regulation of the machine.

The ammonia boils as it absorbs heat from the brine, and then passes into two 10 in. by 10 in. twin cycle, single acting, enclosed type ammonia compressors, manufactured by the Carbondale Ice Machine Co.

These compressors are directly connected by the same shaft to two 100 hp. General Electric motors operating at a speed of 300 r.p.m. In the compressors, use is made of the bull's eye gauge, instead of the pressure gauge system in checking lubrication.

Engineers are thus enabled to see that every working part is receiving the proper amount of oil at all times, according to Prof. Macintyre.

While in the compressors, the ammonia is placed under a pressure of 150 lbs. per sq. in., and then passes into the four condensers, which are of the horizontal multi-tubular type, with a

(Concluded on Page 2, Column 5)

After Class Hours



Students on the University of Illinois campus, which is devoid of any natural body of water, are now skating on the largest artificial rink in the United States, which was completed last month.

NEW GARCO REFLECTOR HAS ADJUSTABLE FEATURE

CHICAGO—An adjustable feature by which the interior illumination in refrigerated display cases can be varied has been incorporated into the new continuous reflectors of the Garden City Plating & Mfg. Co., Chicago manufacturer of commercial refrigerator hardware and display case specialties.

The new reflectors are designed for exterior mounting, with the electric wires carried directly from the mounting bracket into the case. They are offered in the following finishes; allegheny metal, monel, chromium, nickel, or colored porcelain to match other fixtures.

Adjustable illumination is accomplished by means of a swivel reflector, held in any position by a set screw.

Another development of this company is that of making dehydrator cartridges for use in removing the moisture from between the multiple glass panes of low-temperature refrigerated display cases. These are perforated metal tubes for holding the dehydrating agent, and are built to specifications of the various display case manufacturers.

Gibson Service School Attracts First Class Of 55 Men

GREENVILLE, Mich.—Thirty-five employees of the Gibson Electric Refrigerator Corp. attended the first session of a Refrigeration Service School, Dec. 7. The class is to meet three times a week (Monday, Wednesday and Friday). Anyone interested in the mechanics of electric refrigeration is invited to attend.

Elmer Born, veteran electric refrigeration service man, has charge of the class, which is sponsored by C. M. Brown, production manager.

'POLAR-AIRE' REGISTRATION DENIED BY KINNAN

WASHINGTON, D. C.—"Polar-Aire" cannot be registered as a trade mark for an automatic refrigerator, Assistant Commissioner Kinnan of the United States Patent Office has ruled, basing his finding on the fact that the Frigidaire Corp. has used a mark ending in "aire" for many years, and is entitled to protection against confusion with the proposed registration of "Polar-Aire."

BRUNNER CO. ANNOUNCES HOUSEHOLD COMPRESSORS

UTICA, N. Y.—Entrance of the Brunner Mfg. Co., local manufacturer of air compressors for automotive and industrial use, into the field of refrigeration has just been officially announced by George L. Brunner, president.

A separate refrigeration division of the company has been organized to handle sales of the Brunner condensing units for household electric refrigerators, according to Mr. Brunner.

Engineers of the company have been working on refrigerator compressor designs for some time, and test machines have been operating in the field for several months, he explained.

The first compressor introduced to the market is a 1-cylinder reciprocating machine with a V-belt pulley. It has a bore of 1 1/4-in. and a stroke of 1 1/4-in., with a total piston displacement of 2.8 cu. in.

Driven by a 1/6 hp. motor at a speed of 340 r.p.m., it is rated at 100 lbs. of ice melting effect per 24 hours of operation. Driven by a 1/4 hp. motor at 460 r.p.m., it delivers 135 lbs. I. M. E., the manufacturer claims.

G & O MFG. CO. OFFERS LINE OF FIN TUBING

NEW HAVEN, Conn.—The G & O Mfg. Co., here, manufacturers of radiators for engine cooling applications, recently adapted their finned tubing to refrigeration work for condensers and cooling units.

Either square or round fins are offered in the new line, mounted on 3/8, 1/2, 1, or 1 1/4 in. o.d. tubing. In addition to seamless copper tubing, steel and special alloys can be employed for tubes, according to W. P. Raffone of the equipment division of the company.

Sections are offered in straight lengths, in U-bends, and other shapes. "Fins are made of brass, copper, steel, or alloys, and are bonded to the tubing with a high temperature alloy," Mr. Raffone states.

Square fins provide 20% more surface than round fins of a diameter equal to the side of the square, he points out. Surface area per linear foot afforded by the standard finned tubing ranges from .59 sq. ft. for 3/8-in. tubing to 3.55 sq. ft. for 1 1/4-in. tubing, he concludes.

REFRIGERATION SCHOOL NOW IN NEW HEADQUARTERS

CHICAGO—Removal of all departments of the Utilities Engineering Institute to 404 North Wells St., was recently completed. Larger quarters were necessary to take care of present and future growth, according to E. P. Sorensen, president of the institute.

Organized in 1927, the institute has outgrown two locations. It is training men for the electric refrigeration industry in every state in the Union, as well as in English speaking foreign countries, according to Mr. Sorensen. Besides the training service, a placement bureau is conducted for graduates.

EXPANSION FLOOR IS USED FOR NEW RINK

(Concluded from Page 1, Column 4)

x2½ in. were laid lengthwise of the concrete floor at 6-ft. intervals, and 1-in. iron rods were laid on 6-ft. centers crosswise over the sleepers.

To the height of the sleepers fine sand was next poured and leveled in the embryo skating rink, and the job was ready for the 1½-in. steel pipe cooling coils to be laid on their 4½-in. centers, between the iron rods.

When the 13 or 14 miles of cooling pipe had been placed, the floating expansion type of concrete floor furnished by Funk & Wilcox was laid, first in the alternating 6-ft. stretches between the iron rods and then in the remaining alternating intervals.

This floor may expand as much as 1½ in. when the refrigeration is shut down, Mr. Zuckerman said, so the floor was designed as a floating element with no obstructions to its expansion at the sides. The floor expands at the same rate as the pipe, since concrete has practically the same coefficient of expansion as steel.

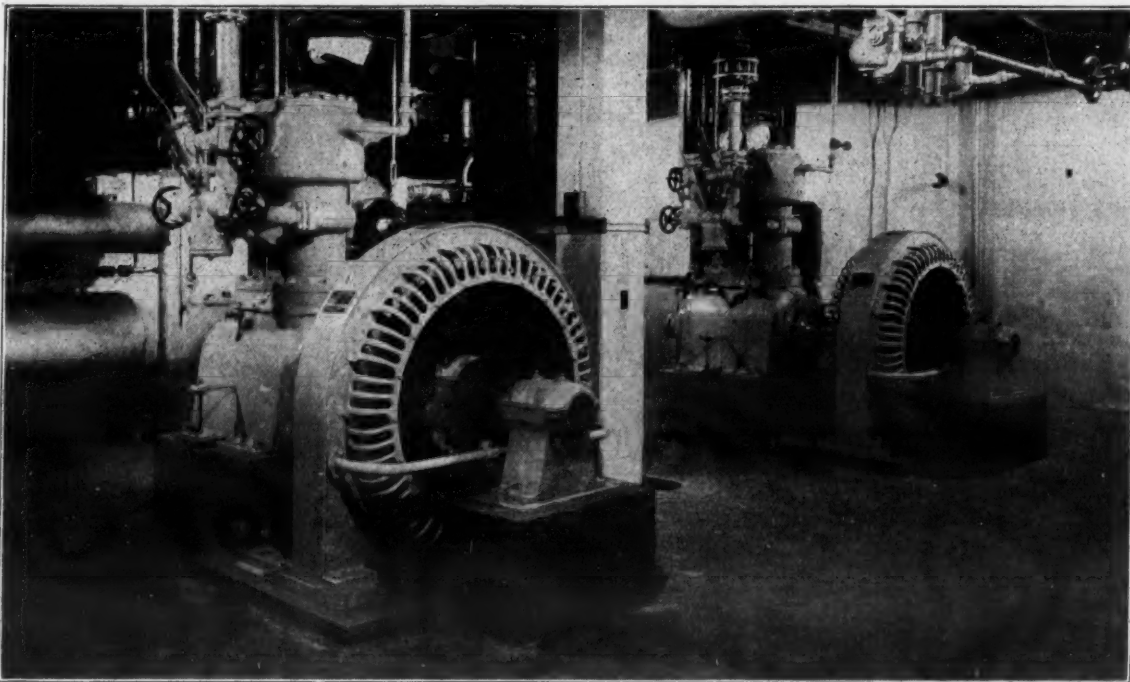
Provision for expansion and contraction was one of the necessary design considerations, Mr. Zuckerman pointed out. The brine headers are fastened at the center of the side of the rink where the brine enters them, but extending each way from there they are supported on rollers.

To remove any air accumulation from the cooling coils, a 2-in. air header was installed in the 6-ft. trench on the machinery side of the rink, and connections made to each coil. The air header terminates in an air trap which vents air to the atmosphere, but will pass no brine. In addition, each coil has an air vent cock for removing the air when the system is started up.

Calcium chloride brine is stored in a steel tank 20x8x8 ft., and circulated through the cooling coils by two Dayton Dowd pumps, one handling 900 g.p.m., the other 600 g.p.m. Either one, or both of the pumps may be used, depending on the load, Mr. Zuckerman stated.

Likewise, control of the refrigeration is effected by operating either or both of the two 75-ton Carbondale ammonia

Big Machines for Student Ice Skating



Two 75-ton Carbondale compressors, driven by 100 hp. General Electric synchronous motors, provide refrigeration for the new ice skating rink at the University of Illinois, Urbana, Ill.

compressors. Ice should not be too hard for ordinary skating, he declared, but for hockey matches it usually is frozen very hard.

"All brine pipes are enclosed in brine thickness of cork insulation, while the brine cooler itself has five inches," he said.

DRY ICE CORP. OF CALIFORNIA GRANTED CHARTER

OAKLAND, Calif.—The Dry Ice Corp. of California has been incorporated here with a capitalization of \$200,000. The incorporators are listed as Arthur A. Plant, Daniel E. McGrath and August H. Fischer.

Refrigerating, Ventilating Engineers To Discuss Air Conditioning in Cleveland Meeting

(Concluded from Page 1, Column 2)

neering will be treated in two addresses. The first, by Dr. S. C. Prescott, head of the department of biology and public health, Massachusetts Institute of Technology, will be on "Refrigeration in Public Health." The second, on "Review of Refrigeration and Food Practice in Europe," will be given by Dr. Arthur W. Ewell, professor of physics, Worcester Polytechnic Institute.

The basic energy problem in domestic air conditioning will be treated by three men in their speeches.

"Application of Refrigerating Machinery to Heating and Cooling of Homes," is the title of a talk to be given by A. R. Stevenson, Jr., of the General Electric Co., Schenectady. "Gas as Energy Medium for Heating and Cooling of Homes," will be discussed by E. C. Milener, New York. "Unit Conditioning for Comfort and Storage Temperatures" will be the subject treated by C. A. Bulkley, Niagara Blower Co.

Refrigerator car surface temperatures, one of the new problems of refrigeration application, will be discussed during the meeting by W. J. Hukill, assistant mechanical engineer, Bureau of Agricultural Engineering, U. S. Department of Agriculture.

Another new problem to be discussed will be that of "Ice for Air Conditioning—A Survey and a Forecast," by R. T. Brizzolara, consulting engineer, New York.

Three different phases of the com-

mercial-domestic field's problems will have time devoted to them at the meeting. J. L. Gregg of Battelle Memorial Institute, Columbus, Ohio, will speak on "Properties and Use of Metal Foil Insulation."

"What Happens in the Evaporator?" will be the question answered by L. A. Philipp, head of the research division, Kelvinator Corp., Detroit. "The Refrigerating Machine as a Production Problem," will be discussed by Edward Hughes, vice president of Copeland Products, Inc., Mt. Clemens, Mich.

YORK ESTABLISHES NEW HARTFORD OFFICE

HARTFORD, Conn.—The York Ice Machinery Corp. has established a new office at 2045 Broad St. to absorb the sales office maintained at 23 Whitney Ave., New Haven.

The service and stock office at New Haven will be continued at 65 Wallace St. R. S. Lockshire, formerly in charge at New Haven, heads the new Hartford office.

JOINS FOSTER D. SNELL, INC.

BROOKLYN—W. C. Pinkerton has taken a position as industrial representative with Foster D. Snell, Inc. He was previously with the International Exposition Co.

American Expansion Valves

Automatic — Thermostatic

A New Valve to the Industry but with Over Three Years of Field and Laboratory Tests—Simplest Expansion Valve

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AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

RINK FLOOR FROZEN BY BRINE AT 15° F.

(Concluded from Page 1, Column 5)

capacity of 40 tons of refrigeration per machine per minute.

The condensers are cooled by water from the university's plant. Having been warmed about 10° F. as it passes through the condensers, the water is then pumped to the south campus for further use, by means of a 400-gal. Allis Chalmers Co. booster pump.

From the brine cooler, where the liquid has been cooled to from 10 to 15° F., it is pumped through the pipes, embedded in the concrete floor, by two brine pumps, one with a capacity of 600 gals. per minute, the other with a capacity of 900 gals. per minute.

The entire skating floor is absolutely independent of the building construction, so that expansion and contraction of the floor, which may amount to a total of 1½ in. between summer and winter operating conditions—according to Prof. Macintire—can take place readily without interference by walls or columns of the building.

At the beginning of the skating season, the concrete floor was cooled to 15° F. by circulating the brine through the pipes in the floor.

Water was then sprayed on the concrete by means of an atomizing machine. This made an instant icy film, which served as a base for 1½ in. of ice formed by successive applications of the water spray.

After a period of several days, the thickness of the ice becomes so great, as a result of fresh applications of spray, that use of a planer is required to lessen the thickness.

Snow formed by the planing process is dumped into one of two snowpits at the sides of the rink, where it is melted and drained off through the sewer.

The rink can accommodate as many as 700 skaters at one time, and has a balcony containing 1,400 seats. Use of bleachers enlarges the seating capacity to 3,000. Unit heaters keep the balcony area at a temperature of approximately 60°.

Three hockey games can be played simultaneously when the rings are arranged across the width; one large rink, with goal posts at the ends, is used for important matches.

The building was designed by Holabird and Root, architects for the University of Illinois Memorial Stadium, and the new Board of Trade building in Chicago.

REFRIGERATING DATA BOOK WILL COME OUT IN APRIL

NEW YORK CITY—The new Refrigerating Data Book and Catalog of the American Society of Refrigerating Engineers will be published in April, 1932.

The personnel of the advisory committee on the Data Book is as follows: A. J. Authenreith, vice president, Midwest Utilities Co., Chicago; C. W. Berry, professor of heat engineering, Massachusetts Institute of Technology; George B. Bright, consulting engineer, Detroit; W. H. Carrier, president, Carrier Engineering Corp., Newark, N. J.

F. S. Fairbanks, chief engineer, Quincy Market and Cold Storage Co., Boston; G. A. Horne, vice president, Merchants Refrigerating Co., New York; L. H. Jenks, Frick Co., New York; H. J. Macintire, professor of mechanical engineering, University of Illinois; Harry Sloan, advisory engineer, Vilter Co., Milwaukee, Wis.

A. R. Stevenson, Jr., General Electric Co., Schenectady; R. H. Tait, consulting engineer, St. Louis; E. T. Williams, consulting engineer, Servel Sales, Inc., New York; Llewellyn Williams, chief engineer, York Ice Machinery Corp., York, Pa.; W. R. Woolrich, professor of mechanical engineering, University of Tennessee.

CHLORIDES MANUFACTURED BY KELVINATOR-HILL JOB

PHILADELPHIA—An installation of Kelvinator refrigeration with a Hill Dry-Cold cabinet has just been made in the plant of the Stratford Cookson Co., manufacturer of dentists' and physicians' supplies, here.

This installation is to take care of the manufacture of both ethyl chloride and methyl chloride. The cabinet is a specially constructed one, 6 ft. long, 5 ft. high, and 4 ft. wide, protected with 3 in. of insulation in layers. A 4-in. layer of cork is flanked on each side a layer of tar paper; also one of white pine wood and one of tancan metal, especially resistant to the action of brine. The last, or outside layer is of wood.

There are two iron tanks, or drums in the cabinet, each of which is immersed in brine at -10° Centigrade. When either ethyl chloride, or methyl chloride is being worked upon, it is placed in one of the drums which is known as the storage tank, and in the other, which otherwise is empty, is placed the tubing, sealed in. Specially constructed coils are employed, and a ¼-hp. compressor.

COMING
NEXT
WEEK

AN ANNOUNCEMENT
OF UTMOST IMPORTANCE TO
MANUFACTURERS OF DOMESTIC
ELECTRIC REFRIGERATORS . . .
WATCH FOR IT!



GENERAL ELECTRIC

Engineers of Warm Air Association Tell of Air Conditioning Studies

(Concluded from Page 1, Column 1)

in nature, good health will be your strongest salesman," was his closing remark.

In the report of the Research Advisory committee, air conditioning was elevated to major importance. "Conditioned air," said the report, "has come to put new life into our industry."

"Let it be definitely understood that a conditioned air system is one which provides positive air circulation, which properly heats, humidifies and cleans the air in winter and later, we may be privileged to add, one which may in summer be used to cool and possibly dehumidify the atmosphere."

In the outline of procedure for the research staff, conducting experiments under Prof. A. C. Willard at the University of Illinois, recommendation was made that information was desired about air washer operation, the following points being suggested:

Points to be Studied

- To determine resistance at rated capacity of washer used;
 - To determine whether air washer can be depended upon for humidification with water at standard outdoor temperature;
 - To determine cleaning efficiency of washer;
 - To determine cooling effect of air washer unit in summer at average summer water temperature;
 - To determine advisability of dehumidification and whether washer increases or decreases humidity when used for cooling as above;
 - To conduct these same tests, if possible, with water at 55° or lower to establish water temperatures necessary to provide suitable cooling and, if necessary, dehumidification in summer;
 - To check quantities of water required for washer operation, both in winter and summer.
- (Ed. Note—the above tests will be of special interest to the refrigeration industry, involving as it would artificial cooling of the water to provide low temperatures and dehumidification in summer).

Prof. Willard also addressed the delegates at the Thursday morning session, discussing the coming research program and the actual system to be installed in the research residence in Urbana, Ill.

Object of Research Residence

"The objectives in view in making this installation," declared Prof. Willard, "are to determine both performance and operating data for such a system, which will be of the greatest general value or assistance to the members of the association and the public in designing, installing and operating such systems of heating, ventilating and air conditioning of residences."

Expansion of all phases of the heating industry to include complete air conditioning in homes was treated at the two-day heating conclave as an impending new development. Aerologists and engineers disclosed means for low-cost, automatic, filtering, washing, humidifying, heating and cooling, and circulating indoor air in residences.

WASHINGTON—Predicting that within five years a home will not be regarded as "modern" unless it is air conditioned, C. H. Landwehr, president of the Holland Furnace Co., made some pertinent remarks in an informal address before the delegates of the National Warm Air Heating Association convention Dec. 3.

"Air conditioning in homes has heretofore been impossible because the cost of individual installations ran into thousands of dollars," he stated. "Many air conditioning units now being developed for homes are, on the other hand, low in cost and occupy only a few square feet of floor space."

"They operate as a part of or in conjunction with all types of heating systems. The air sent into the rooms is filtered, washed, humidified and circulated, as well as heated in winter. The same equipment cools and washes the air in summer."

"The potential size of the market is based upon the low cost of the unit and the number of homes which might logically desire such facilities. When replacements, installations, refrigeration, and other features are taken into consideration, the estimate of \$5,000,000,000 for the market created is probably not excessive."

Market Possibilities

"This market will, of course, develop over a period of years. It is safe to say, however, that during the next five years, air conditioning in homes will be accepted as being as much of a necessity as electrification."

Prof. Frank B. Rowley, who spoke on "Air Conditioning in the Home," at the Thursday morning session, is director of the Experimental Engineering laboratory at the University of Minnesota, as well as vice president of the A. S. H. V. E.

After a lengthy discussion of the factors affecting indoor temperatures and humidity, Prof. Rowley launched into a discussion of artificial cooling. "When the outside temperatures become higher than that required for comfort and health," he continued, "then the problem of heating becomes one of cooling."

"Air may be cooled in several ways. If cold water is available, it may be cooled by passing it through a spray of cold water. In this case, there will be a direct cooling, depending upon the temperature differential between the air and the water."

"If the air is dry, there will also be a cooling depending upon the amount of water evaporated and taken up by the air. If, on the other hand, the air contains water or moisture to such an extent that it is cooled below the dew point, some of this water will be condensed out of the air and the air will leave the washer as a lower relative humidity."

"In this case, not only will the actual temperature of the air have been lowered, but the effective temperature will likewise have been lowered, due to the fact that the relative humidity has been reduced. If this method is to be effective, the temperature of the cooling water must be some 15 or 20° below that of the air."

If cold water is not available, ice or mechanical refrigeration may be used. For ice, there are two possible methods: (1) the air may be brought directly in contact with the ice at which time the air is cooled and relieved of its sensible heat and also of part of its moisture if it is cooled down below its dew point, or (2) the air may be passed through sprays of water which have been cooled by passing the water over the ice. In this case, the sensible heat will be removed from the air, moisture being either added or removed, depending upon the moisture condition of the entering air and its temperature when leaving the water spray.

Direct Expansion

"The air may also be cooled by direct refrigeration. In this case, the air may be passed over cooling coils, or the refrigerating coils may be used to cool the spray water through which the air is passed. If the air is passed directly over the cooling coils, it will be relieved of its sensible heat and, also, of some of its moisture if it is cooled below the dew point."

"The same results will be obtained by passing it through the cold water spray, but in this case if it is not cooled below the dew point, it may actually absorb some of the water of the spray."

"Aside from the direct problem of cooling the air, there is the question of where to locate the cooling apparatus and how many rooms it is practical to cool."

"If artificial refrigeration or even ice must be resorted to, the cooling is a rather expensive process. It is usually not practical to cool the entire house, but rather necessary to shift the cooling effect to those parts actually occupied. Thus, living rooms might be cooled throughout the day, and sleeping rooms during the night."

"Consider the cooling required for an average six-room house occupied by six

people. If the occupants are at rest, they will generate approximately 2,400 B.t.u. per hour.

"If the house be considered to be of average construction with single windows, with a 70° temperature inside and a 90° temperature outside, the heat coming into the house from the outside will be approximately 15,000 B.t.u. per hour, or nearly seven times that required to keep the occupants cool."

Home Cooling by Portions

"This shows clearly the necessity of confining the cooling to certain portions of the house and also the necessity of considering the design of the house as a part or in conjunction with the design of the cooling system. It is more necessary to insulate a house which is to be cooled than it is where heating alone is the problem. In spite of this fact, most consideration for insulation has been given to the houses built in cold climates."

"The localization of the cooling effect

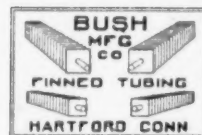
may be accomplished in several ways. First, there may be a central cooling plant from which the cooled air is recirculated to the various rooms as required. If this method is used, the circulating ducts should be provided with tight dampers which may be closed off, and the ducts should be insulated between the source of supply and the rooms."

"Another practical method is to have a central cooling plant in the basement, from which cooling water is circulated to the various rooms and there passed through either direct or indirect coolers, the air in the room being circulated over these coolers, supplying only enough new air for ventilation requirements."

"The third method of cooling is to provide unit coolers for the various rooms which may be supplied with individual refrigerating machines or directly with ice. A de-centralized system of this kind, of course, has the disadvantage of requiring greater attention than the centralized plant."

CONDENSERS STANDARD SIZES OR TO YOUR SPECIFICATIONS FINNED TUBING

FOR BOTH HIGH
AND LOW PRESSURE
SYSTEMS

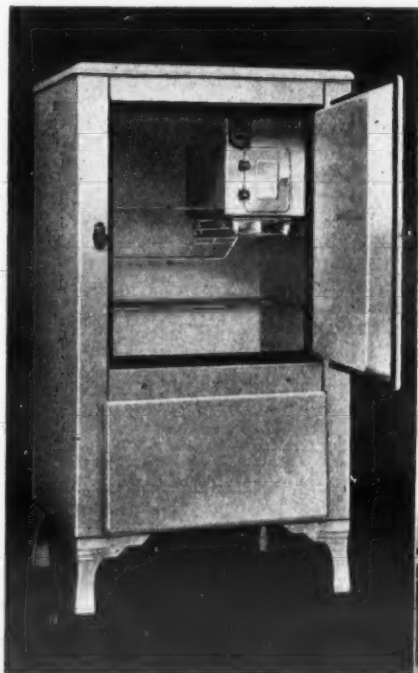


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ALUMINUM OR
STEEL

THE BUSH MFG. CO.
HARTFORD, CONN.

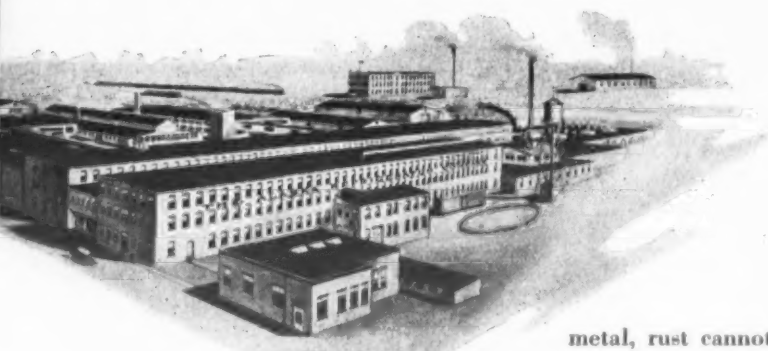
W. H. MARK HANNA 6-247 General Motors Bldg. DETROIT, MICH.
REFRIGERATOR APPLIANCES, CHICAGO VAN. D. CLOTHIER, LOS ANGELES

In the Factory . . . On the Salesfloor



BONDERIZING benefits Norge!

All enamel finished cabinets Bonderized at
Muskegon Plant



ONE of the first flight leaders in refrigeration for 1931 was Norge. With selling activity limited to a few major cities for several years, Norge began national distribution last January, with splendid results.

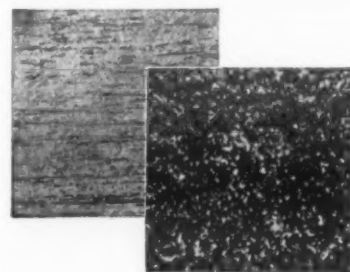
Built around the famous "Rollator," the Norge has many other features appealing from the standpoint of beauty, and long, excellent service.

Among them is "Bonderizing."

In the Norge cabinet plant at Muskegon every cabinet to be finished with enamel is carried along an overhead conveyor line to the Bonderizing tanks, where it is given a ten-minute immersion.

Because Bonderizing permanently holds the enamel to the steel, rust

is completely defeated. Even if accidental abrasions expose bare



PHOTOGRAPH (above left), of an untreated piece of cold rolled steel enlarged 100X. Note lack of uniformity of surface and the smooth areas where it is difficult for enamel to adhere.

On the right is illustrated a typical Bonderite coating enlarged 100X. Contrast this to the other and note the uniform crystalline coating which holds the enamel tenaciously.

metal, rust cannot eat under the enamel.

A Bonderized enameled product has a distinct sales advantage over one that's unprotected.

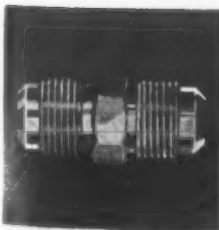
This—together with the demonstrable fact that Bonderizing is the most efficient production method for preparing metal for paint, enamel or lacquer—explains why it has been adopted by Norge and other refrigeration leaders; by five of the largest automobile makers; and by a host of other manufacturers of iron and steel products.

Full particulars given interested manufacturers. Write for booklet—"Bonderite."

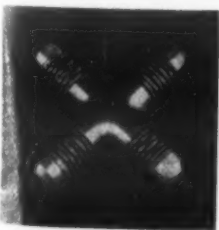
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HOLD'S PAINT TO THE STEEL

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SEEPAGE PROOF



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Every forging must be seepage-proof

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Commonwealth Brass Fittings are made from hot forged brass or extruded brass rod. The close granular structure produced by either of these two methods precludes any possibility of seepage.

In addition, every thread is cut to close limits (S.A.E. No. 2 Standard), each tube seat is protected in shipping and each piece is 100 per cent inspected. Each fitting is

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ENGINEERING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Note: ELECTRIC REFRIGERATION NEWS is published every week. The Engineering Section (green paper) appears as Part II every two weeks.

Published by

BUSINESS NEWS PUBLISHING CO.

Also publishers of REFRIGERATED FOOD NEWS (monthly) and the REFRIGERATION DIRECTORY (annual).

550 Maccabees Building, Woodward Ave. and Putnam St. Detroit, Michigan. Telephones: Columbia 4242-4243-4244

Subscription Rates:

U. S. and Possessions and countries in Pan-American Postal Union: \$2.00 per year; 3 years for \$5.00
Canada: \$5.00 per year (U. S. money).

All Other Countries: \$3.00 per year; two years for \$5.00
Advertising Rates on Request

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VOL. 6, No. 15, SERIAL No. 143, Part 2, DEC. 16, 1931

Buying Information

RELIABLE buying information has been much in demand in the refrigeration industry, and to answer the daily requests for information on sources of supply for various parts, materials, and accessories is a job which continually taxes the ingenuity and informational resources of the editors of ELECTRIC REFRIGERATION NEWS.

Intelligent selection, with regard to quality and suitability, of the materials that go into a manufactured product, coupled with careful placement of orders with dependable suppliers, has been recognized as one of the prime considerations of successful business enterprises.

Economical buying is one of the principal aims of the purchasing department, especially since increased competition has focused the manufacturer's attention so directly on the factor of reducing costs.

Difficult, and usually even more important, is the problem of choosing component parts and materials which satisfy the standards of quality established by the engineers.

The electric refrigeration industry has found the choice of suppliers fraught with complex problems.

Locating Supplies

Its recent growth and future possibilities have attracted many suppliers of other industries to design new products and offer them to the refrigeration trade. Companies well-known in the field have given added attention to developing new equipment and improving established lines.

The current result of this activity is that a veritable flood of new and refined products is being offered to the manufacturers of complete refrigeration systems. It is to their advantage to know about these new products and to consider them for possible adoption.

Many of the best engineers in the country are working on the design of new parts and materials for electric refrigerators. Results of their activities are rumored around the refrigeration industry, but to locate actual names and addresses of those offering new products challenges the alertness of the best-informed.

Changes in Personnel

Personnel changes from one company to another in the industry are numerous, and often handicap new men in an organization in locating sources of supply because the requirements of the new company may vary widely from those with which they were familiar in their former positions.

It is generally the company or individual which is seeking some new product, or entering a new field, or attempting to meet some definite requirement—and one which is prepared and eager to buy the product once it has been located—that has precipitated the deluge of letters-to-the-editor requesting buying information.

In these days of slack business in so many industries it would seem almost preposterous that people who want certain products and have cash-in-hand to pay for them would have to search far and wide to find what they want. Such, however, is the case in point in the refrigeration industry.

It isn't necessary to go to great lengths to prove this point; all one need do to be convinced

is to read the requests for information which are reproduced on this page and the one adjoining. These queries, all of which have arrived in the office of ELECTRIC REFRIGERATION NEWS within the last few weeks, are samples of the kind of questions sent to the editors every day from men who want to buy something and don't know where to get it.

Even a hasty perusal of these questions will indicate how great is the need for a handy source of information on the industry.

Partly in self-defense the NEWS is publishing a complete directory of all sources of supply of raw materials, parts, supplies, accessories, and services needed by the industry.

Also in the 1932 REFRIGERATION DIRECTORY will appear lists of manufacturers of companion and related merchandise, and everything (even down to office equipment!) a refrigeration dealer or distributor would need in his business. Another important section of the DIRECTORY will present all available statistics on the growth and present volume of business done by the refrigeration industry.

The finished book will be a complete buyer's guide in refrigeration—a supplemental service to ELECTRIC REFRIGERATION NEWS and REFRIGERATED FOOD NEWS.

GLEANINGS FROM RECENT PERIODICALS

THE Majestic refrigerator plant of the Grigsby-Grunow Co., Chicago, makes extensive use of machine lapping in the manufacture of mechanical parts for its electric refrigerators. This is a new plant and the machine lapping was put into practice when it was first started. The lapping is done on flat pieces only, the parts having been previously finish ground to close limits for size, parallelism and flatness.

All steel parts to be lapped are first turned or shaped to size and then heat treated to produce a hardness of 60 plus on the Rockwell C scale. They are then ground, from 0.0002 to 0.0004 in. of stock being left for the lapping operation. The parts are then passed to the machine lapping department for finishing; all parts are finished in one operation.

The plant makes use of machine lapping essentially for the finish obtainable, for parallelism of opposite surfaces, and in some cases to obtain extreme accuracy of size. For instance, the exact thickness of a Stellite valve seat is not so important as are finish and parallelism. Another example is afforded by the ends of pump bodies, which together with the heads must have such surfaces that the bodies and the heads can be bolted together without a gasket, that is, steel to steel, and at the same time seal the joint effectively against SO₂ gas.

A battery of 27 I-F lapping machines made by the Norton Co., Worcester, Mass., for flat work constitutes the machine equipment. In these machines two cast-iron laps—an upper and a lower—are mounted on vertical spindles and the work is driven in a horizontal plane between them, both laps being in contact with the work.

The lower lap, driven from a mechanism in the machine base, rotates at speeds ranging from 60 to 65 r.p.m. The upper lap, carried in a spindle in the overarm, does not rotate, but is free to float and find its own level when brought into contact with the pieces to be lapped. The entire dead weight of this lap, about 250 lbs., is brought to bear on the parts being lapped. The laps are made of a soft close-grained cast iron and the cutting medium is fine abrasive in kerosene.

The arrangement and the drive of the workholder or carrier of these machines are importance elements, since it is through them that the machine simulates mechanically the hand lapping motion of the tool-maker on his flat lap. This workholder may be of a wide variety of designs, including specials with adaptors. Its speed of rotation ranges from 30 to 35 r.p.m. and an important feature is that an eccentric motion is given it, throwing the parts being lapped from the inside to the outside of the laps and thus providing uniform wear of the laps.

These machines stand back to back with the lapping heads on the aisles, and the motor ends are so staggered that a minimum of floor space is required.

The laps are redressed when needed to correct the lap faces, making them true planes and parallel. The redressing is accomplished by first grinding each lap on a Heald surface grinder, and then working a pair of them together on an upright drill press. One lap is fastened on the drill press table and the other rests on it; between the two laps there is abrasive and oil, the lubricant in this case being a 320 compound. By means of a crank in the drill press spindle, the upper lap is made to move in an eccentric path across the lower lap, the upper lap at the same time rotating slowly. During the process frequent inspection is made with a straight edge that extends across the full diameter of the work.

Applications of machine lapping at the Majestic refrigerator plant include the finishing of Stellite valve seats, which are lapped to within 0.0001 in. for flatness and are required to have a finish that is without scratches. The Stellite is welded into a cold rolled steel ring, seven of which are mounted in a fixture or holder. Thirteen of these are mounted in the carrier of a lapping machine.

Another interesting application of machine lapping is on pump bodies made from No. 1020 steel. These are lapped to 0.0002 in. for size and parallelism and the surfaces must be such that the joints between the bodies and the heads are gas tight, without the use of a gasket. It is interesting to note here that the diameter of the pump bodies is approximately the same as the diameter of the holders for smaller parts so that either pump bodies or holders readily fit the carriers on the machine. These pump bodies are lapped at the rate of 175 per hour with one operator attending three machines.—Iron Age, November 19, 1931.

Typical Requests for Buying Information (See Editorial on This Page)

Methyl Chloride Units

Will you kindly advise us as to names and addresses of manufacturers, who are manufacturing electric equipment for use with methyl chloride as refrigerant; for units of three tons per day IMC and upwards.

Aluminum Trays

Can you give me the names of the manufacturers who furnish the aluminum trays with grids therein for forming the cubes in electrical refrigerators. I assume that these are not made by the refrigerator manufacturers themselves but are furnished them by one of the accessory manufacturers.

Coin Operated Meters

Will you furnish me the names and addresses of all companies manufacturing and wholesaling coin operated meters for electric refrigerators as illustrated on page 24 of the June Merchandising Section of your ELECTRIC REFRIGERATION NEWS. I am desirous of securing detailed information and literature on these meters.

Will you kindly give us the names and addresses of firms manufacturing meters for application to domestic refrigerators, especially the Meter Ice Co. and others of the same class.

We understand there are two manufacturers making equipment along the meter ice idea.

We have the name and address of the Meter Ice Co., but would like the name of the other manufacturer if you could give it to us.

Will you please wire us collect, any information you have in regard to a meter ice machine for a mechanical refrigerator.

There is one in use here which is tied up by the Platt Music Co., which is called the "Meter Ice" made by General Electric.

We have a client who is very anxious to get a machine of this type for a considerable quantity of boxes.

We are interested in a meter with which to operate the 25-cents a day plan that has become so popular recently. Will you forward a list of manufacturers who produce such a meter.

Ratchet Wrenches

We have been looking for a source on ratchet wrenches with a 1/4-in. square opening, suitable for operating refrigeration valves with exposed stem, but haven't been able to find a source. Possibly your advertising department or your editorial department can help us. We, of course, are looking for a manufacturer as we will offer these for resale.

Automatic Humidity Control

Can you furnish me with the address of anyone building a device for automatic humidity control in moderate size retail store refrigerators and meat coolers?

Is there a device manufactured which is known as Perfectair or Perfectaire? I have heard of something like that and would like to get in touch with the manufacturers.

Refrigeration Schools

Please send me any information that you can, in regard to Electric Refrigeration Schools, the addresses, price of course, and length of time it takes to complete course.

Cooling Units

Please advise makers of cooling units for small electrical refrigerators for domestic use.

Copper Tubes

We ask you kindly to inform us, whether you are able to give us information with regard to where we can obtain copper tubes provided with copper fins for building cooling coils (intended for little refrigerators) working with sulphur dioxide.

The copper tubes must be seamless, deoxidized,—outside measure of the pipes to be 1/2-in. to 3/4-in.—outside measure of the ribs to be about 1 1/2 in. to 2 in.

The number of ribs to be about 90-100 per yard.

Oil Burner Equipment

We are subscribers to your publication and would thank you for giving us at your earliest convenience the names and addresses of all manufacturers of the following goods:

Electrodes, binding posts of these to the burner, insulators, preheaters.

All the above goods are to be used with oil burners.

Ratchet Wrenches

We are writing you in regard to where we can purchase ratchet wrenches. If you know of any place that we can buy them kindly mail us the address of same.

Thermostatic Control

I kindly ask you if you could give me information. If there is a company by the name Ranco which makes thermostatic cold control switches. If there is please send me the address. I have a control with a Ranco name and no address.

Methyl Chloride Compressors

I would like to buy one or more 1-in. compressors for methyl chloride, and would like to have casting in dura aluminum, and not over 10 in. in height.

Refrigeration Manufacturers

Would it be possible for you to furnish us with an up-to-date list of all gas and electric refrigerator manufacturers. We will appreciate anything you can do in getting this to us at an early date, or if you cannot furnish same, advising us where such a list can be obtained.

Refrigeration Instruction

I am writing you, thinking perhaps you can inform one, where I might obtain instruction in electric refrigeration, either at a school or a manufacturing company.

'Colde' Refrigerator

Have you ever heard of the electric refrigerator known as the "Colde"? We have heard that it is made by the Service Electric Co. We have not been able to locate this company.

Truck Equipment

Kindly furnish us promptly with the names and address of manufacturers of and dealers in the following items for use in insulated and refrigerated motor truck bodies:

- (1) Insulation.
- (2) Door hardware, locks, etc.
- (3) Compressors.
- (4) Cooling units.

Ice Cube Trays

We are in the market for aluminum ice cube trays for domestic refrigerators, and are wondering if you can put us in touch with several concerns who manufacture these trays.

Glass Defrosting Trays

Please advise us where glass defrosting trays can be obtained. We are interested in trays that are approximately 10 in. wide by 14 in. long by 2 in. deep.

Odor Absorbents

Could you furnish us with the street address of the Odorgone, Ltd., at Los Angeles, Calif.?

Also, is there any other manufacturer of a substance which will absorb foreign odors in refrigerators?

Repair Parts

We have had considerable difficulty at times, in securing parts for standard makes of refrigerators such as Kelvinator, Frigidaire and so forth.

Can you advise us as to whether there is a manufacturer manufacturing these parts.

Welsbach Parts

Will you please inform me as to where I can get parts for Welsbach unit.

Breaker Strip Moulding

Will you kindly forward us names of manufacturers of breaker strip mouldings for refrigerator cabinets.

Truck Refrigeration Parts

We, as manufacturers of truck chassis and bodies, would like very much to receive a list of names of the different companies manufacturing parts for the assembly of truck refrigeration units, also the names of companies manufacturing the whole unit used in this class of work.

Zero-Zone Parts

Kindly advise me, as to where I can get information and parts for the Zero-Zone refrigerator.

Compressor Manufacturers

Will you be good enough to send us a list of manufacturers of compressors and coils for apartment house work?

Refrigerator Packing

We are desirous of obtaining the name and address of the makers of the Webb Slingabout, which we understand is a harness and pad for packing refrigerators.

At the same time, we would appreciate your giving us the names of any other manufacturers of a similar article to whom we can write.

Sunbeam Manufacturer

Would appreciate very much your furnishing us with the name of the manufacturer of the Sunbeam unit which is used in the Cold Spot electric refrigerator.

(Concluded on Page 5, Column 1)

Requests For Information

(Concluded from Page 4, Column 4)
tor being marketed by the Sears & Roebuck Corp.

We understand that the Baldwin Locomotive Works are manufacturing these compressors, but wonder whether or not they control the patent and whether there are other licensed manufacturers of this unit.

Would also appreciate the patent number covering this compressor so that we may obtain a copy of the patent from Washington for our own information.

Methyl Chloride Supplier

Do you mind sending us a list of sources from whom we may purchase methyl chloride as well as double depth ice cube trays or so-called desert trays.

Display Case Glazing

Can you advise us who manufactures Gum Seal, or a similar rubber composition cement, which is used in glazing refrigerator display cases.

Display Case Dehydrators

Please send us the names of manufacturers making dehydrators to be used between the glasses in refrigerator display cases.

Refrigeration Supplies

A customer of ours is interested in obtaining a source of supply on copper tubing cutters, bending tools, felt for packing drums for gas, and drums for permanent installations, sizes 4 lbs., 5 lbs., 10 lbs., 30 lbs., and 60 lbs.

Could you give us information as to sources on this material which we could pass on to them?

I understand that you publish a trade list showing sources of supply for various material required in the refrigeration business, and if so I would appreciate it if you would send me three copies of this list.

Accessories

We are interested in refrigeration accessories, such as vegetable pans, dishes, etc., for small household refrigerators. We would appreciate your assistance in compiling a list of concerns engaged in this field.

Address of Company

Will you kindly advise us the street address of the Refrigerator Appliance Co. in Chicago.

Piston Rings, Gaskets

We are interested in securing quotations on piston rings and gaskets for domestic compressors. Will you kindly forward us, at your earliest convenience, a list of manufacturers of both products, preferably only those situated east of the Mississippi.

Rotary Compressors

Please inform me where I may purchase rotary type compressors and evaporator units only. I have several customers who wish to change their vertical compressors to the rotary type. I will mail you my order for your NEWS in a few days.

SERVICE HINTS

By FRANK W. GRAY

THE capacity of refrigeration compressors varies, of course, with their condensing power. With air-cooled compressors this variance of capacity is very wide, since the condensing power depends to a large extent upon climatic and atmospheric conditions. All service men know that proper ventilation is an important factor in the installation of air-cooled compressors, particularly with the larger machines.

The condensing capacities of water-cooled compressors vary to a certain extent according to the local temperature of the water, but in far less degree than air-cooled machines.

Most service men are aware of the fact that where conditions of climate or location are adverse, that the more dependable condensing capacity of a water-cooled machine will make more certain the handling of peak load requirements.

A larger and more powerful air-cooled compressor is usually required to handle a given load since the air-cooled compressors operate at their lowest capacity during the summer months when the refrigeration load is naturally the greatest.

Large Compressors With Air

Since water is a somewhat more dependable medium for heat transfer than air, it would seem that under ordinary conditions it would be more advisable to use water-cooled machines in preference to air-cooled machines for commercial and apartment house installation.

But there are several drawbacks to the water-cooled compressor which often make its use impracticable. Water rates in some sections of the country are so high—in San Francisco, for instance—that the average monthly water bill for a 1-hp. compressor may be in excess of \$15.

This makes the operating expense of a refrigeration system come high, especially when one reasons that the additional condensing capacity of the water-cooled machine is needed during only about two months in the summer time, air cooling being entirely sufficient to give the machine the required condensing capacity during the fall, winter, and spring, when the air is cool enough to readily absorb the heat.

Both Types Under Test

Various experiments have been conducted in the past with combination air and water-cooled machines. Ammonia engineers have used the combination cooling in various ways. Test models of compressors have been constructed in which water was allowed to drip over condensers which were finned for air circulation and which were cooled by a fan draft.

In other models air condensers have had their lower coils submerged in a tank of water. In one instance which came to the writer's attention, a service man had attempted to increase the condensing capacity of an air-cooled compressor by allowing the draft or air from the fan to blow through a wide meshed cloth, which was kept saturated with water by the drip from a can hung overhead.

Most of these combination cooling devices were merely experiments, and were not designed with an idea to permanent construction.

There is, however, a need for a refrigeration compressor of suitable size to take care of commercial and apartment house systems, which utilizes a combination of air and water cooling. The condenser of such a machine would be of standard air-cooling specifications, but designed with an auxiliary water cooling device by which a controlled flow of water would supplement the air cooling at such times that the condensing capacity of the machine was insufficient to take care of the refrigeration load economically and efficiently.

This type of machine should use water cooling as an auxiliary during less than 10 per cent of the time, using air the greater majority of the time, with consequent economy of operation and with the same relative efficiency which a completely water-cooled unit would have.

Constructing a Combination

There is more than one way to construct such a combination machine. One very good way to construct such a combination condenser would be to coil up a condenser of $\frac{3}{8}$ -in. finned copper tubing—tinned, of course—with an auxiliary $\frac{1}{4}$ -in. or $\frac{5}{16}$ -in. water tube run through it, thus following the double tube condenser construction now used in so many water-cooled condensers on the market, except that the outside tube would be coiled in radiator style with fins to give greater surface for air circulation from the fan on the motor.

The flow of water through the smaller inside tube should be controlled by a pressure actuated water valve, by-passed

into the tube connecting the cylinder head of the compressor with the top of the condenser. This pressure-operated water valve could then be set to release a flow of water through the condensing coils when the head pressure on the machine rises to 110 to 140 lbs. (depending upon the type of machine and the characteristics of the refrigerant used).

To Operate Intermittently

This construction design would cause the auxiliary water cooler system to function during only a small portion of the time, cutting in only when the head pressure of the machine rises to a danger point, and providing a safety factor when air cooling is insufficient to handle the refrigeration load efficiently.

Air-cooled compressors might be converted to combination air and water cooling, however, without a complete reconstruction of the condenser in the manner mentioned above.

If the receiver tank on the air-cooled machine were replaced with a water-cooled receiver tank, the water coil in the receiver being connected to a pressure controlled water valve installed in the system in the manner mentioned above, practically the same results would be obtained.

If no water-cooled receiver were available the service men might convert the receiver on the air-cooled machine by removing the end of the receiver tank, coiling the water tubing into it, and then re-welding the tank.

Pressure-operated Water Valve

The pressure-operated water valve would then release a flow of water through the receiver tank when the head pressure rises to a danger point, adding additional condensing capacity.

Such a combination machine would have the economical advantages of air cooling, and still could be installed under conditions where water-cooled machines are usually required.

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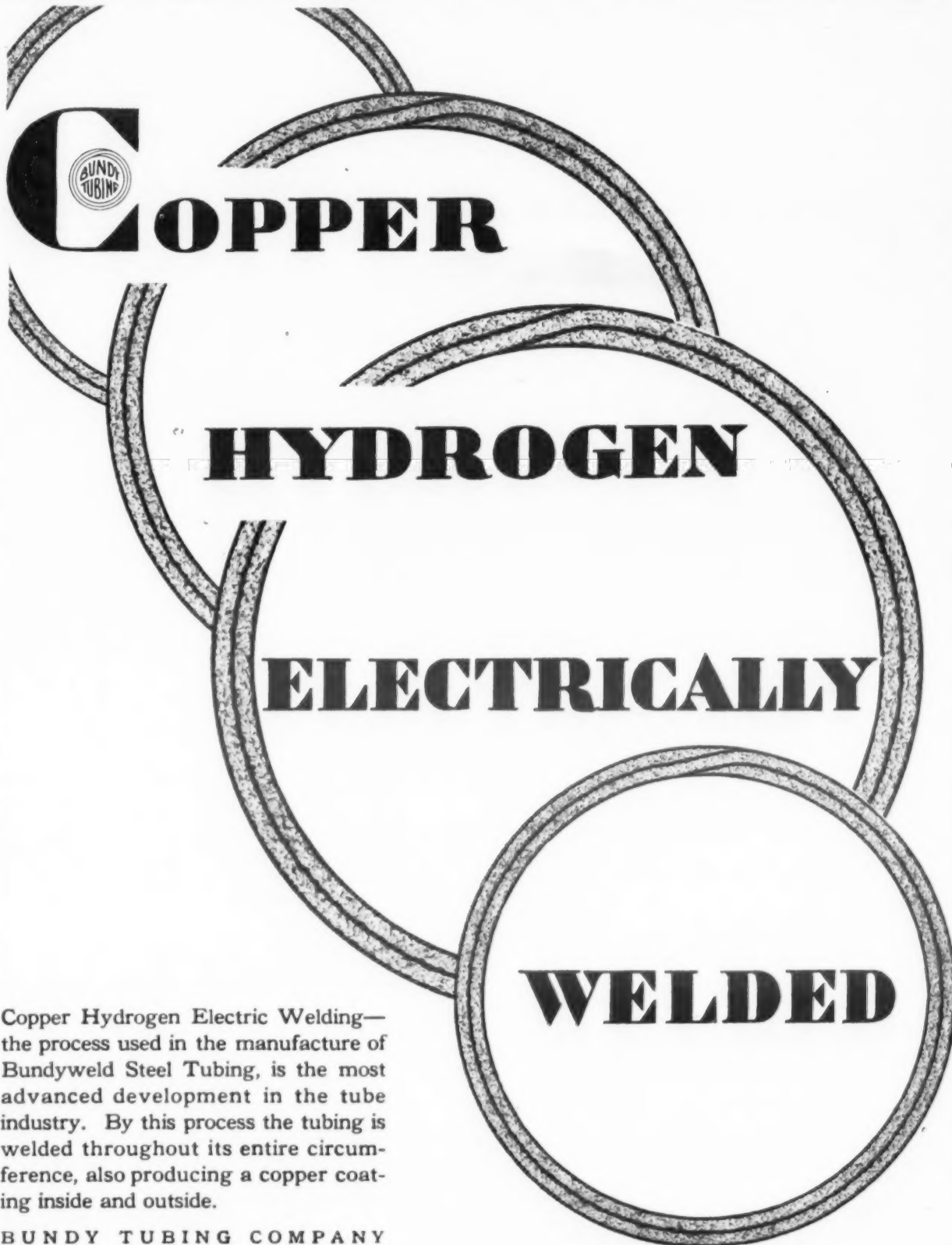
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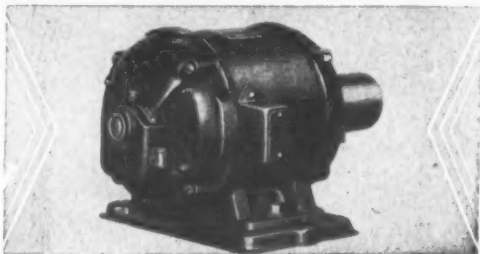
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ISSUED NOVEMBER 17
(Continued from Last Issue)

1,832,592. REFRIGERATOR CAR DOOR.
Edward A. Sweeley, Alexandria, Va., and
Norman T. Anderson, Washington, D. C.
Filed July 18, 1930. Serial No. 468,892. 4
Claims. (Cl. 20-35.)

1. A door structure, comprising a pair of
hinged doors, one door formed with a
rabbet in its inner stile, the other door pro-
vided with a transversely movable stile posi-
tioned along its inner stile to register with
the rabbet in the other door, longitudinally
slidable and laterally swinging bolts con-
nected to one of the doors, a rotatable mem-
ber to which the adjacent ends of the bolts
are eccentrically connected, means connect-
ing the movable stile of one door with at
least one of the slidable and laterally swing-
ing bolts, a swinging lever connected with
the rotatable member to turn the same to
project the locking bolts and move the
transversely shiftable stile to project it
into the rabbet of the companion door in
throwing the lever in one direction and
retract the locking bolts and movable stile
in throwing the lever in the opposite di-
rection, and means for fastening and hold-
ing the swinging lever in position for hold-
ing the locking bolts and movable stile
projected.

DESIGNS

85,570. CABINET LEG OR SIMILAR
ARTICLE. Howard E. Blood, Detroit, Mich.,
assignor to Norge Corp., Detroit, Mich., a
Corporation of Michigan. Filed Jan. 21,
1931. Serial No. 38,409. Term of patent 14
years.

REISSUES

18,253. REFRIGERATOR AND REFRIG-
ERATING APPARATUS. Delos P. Heath,
Detroit, Mich. Original No. 1,726,486, dated
Aug. 27, 1929. Serial No. 20,912. Filed April
8, 1925. Application for reissue filed April
8, 1930. Serial No. 480,603. 38 Claims. (Cl.
62-126.)

15. In a refrigerator, a compartment con-
taining a removable cooling unit, a machine
compartment containing a removable refriger-
ating medium circulating unit, operative
interconnections between said units, the
walls of the refrigerator having openings to
permit the insertion in said compartments
of said units and interconnections in as-
sembled form, and removable panel means

for said openings, said interconnections
passing adjacent to a side wall and a top
wall within said cooling compartment.

ISSUED NOVEMBER 24

1,832,874. AIR CONDITIONING DEVICE
FOR COLD STORAGE ROOMS. Charles A.
Moore, Edina, Minn. Filed March 19, 1930.
Serial No. 437,012. Renewed April 30, 1931.
8 Claims. (Cl. 62-99.)

6. The combination with a structure form-
ing a room, of a bunker located in the upper
portion of the room, refrigerating means
disposed within the bunker, said bunker
having hollow walls forming passageways,
one passageway having an air egress open-
ing at the lower portion of bunker and the
other having an air ingress opening at the
upper portion thereof, means for introduc-
ing air from the outer atmosphere into said
first passageway at an elevation above said
air egress opening, and means for conduct-
ing air to the outer atmosphere from said
second passageway at an elevation below
said air ingress opening.

1,832,902. REFRIGERATING APPARATUS.
William C. Holbrook, Dayton, Ohio, assignor,
by mesne assignments, to Frigidaire Corp.,
a Corporation of Delaware. Filed July 30,
1927. Serial No. 209,559. 1 Claim. (Cl. 16
-128.)

In a pressed metal hinge for refrigerat-
ing cabinets, a member having an L-shaped
base adapted to be mounted on a frangible
base, said member having a bent flange
forming a convex surface contacting the
base, the marginal edge portion of the flange
extending away from and out of contact
with the base so as to prevent breakage of
the frangible base at the contacting point
of the bend with the base, whereby sub-
stantially no mars are made on the base
by said contacting portion.

1,832,903. REFRIGERATING APPARATUS.
William C. Holbrook, Dayton, Ohio, assignor,
by mesne assignments, to Frigidaire Corp.,
a Corporation of Delaware. Filed Dec. 31,
1927. Serial No. 243,978. 6 Claims. (Cl.
20-35.)

2. A refrigerator door having a flange
comprising a section of irregular width and
a section of regular width, and a seal cov-
ering all of said sections.

1,832,904. REFRIGERATING APPARATUS.
Harry B. Hull, Dayton, Ohio, assignor, by
mesne assignments, to Frigidaire Corp., a
Corporation of Delaware. Original applica-
tion filed Jan. 21, 1925, Serial No. 3,789.
Divided and this application filed Dec. 11,
1925. Serial No. 74,727. 12 Claims. (Cl.
217-74.)

1. A refrigerator cabinet, comprising a
compartment, front and rear walls, a mem-
ber secured to one of said walls, the ends of
said member being adapted to bow toward
the other wall without distorting the wall
carrying same, and means connected with
the ends of said member and extending to
said other wall for clamping the compart-
ment between said walls.

2. A refrigerator cabinet, comprising a
compartment, front and rear walls, a mem-
ber secured adjacent the side of the cabi-
net, and means connected with the ends of
said member and extending to said other
wall for clamping the compartment between
said walls.

3. A refrigerator cabinet, comprising a
compartment, walls, members carried by
said walls below the compartment, and
wedge-shaped members adapted to be driven
between said first members and the com-
partment for supporting said compartment.

1,832,912. STRUCTURE FOR CONDI-
TIONING AIR FOR STORED PRODUCE.
Charles A. Moore, Edina, Minn. Filed Jan.
3, 1927. Serial No. 158,762. 4 Claims. (Cl.
62-104.)

4. The combination with a building struc-
ture forming a storage room, of air condi-
tioning and circulating means in said struc-
ture including a centrally disposed upright
casing of elongated construction having an
air header in the upper portion thereof com-
municating with the interior of the casing
from end to end thereof, and having air
egress openings along the sides at the bot-
tom thereof, air refrigerating means within
the casing, ducts open for the ingress of
air thereto along the length thereof and dis-
posed along the casing near the ceiling of
the room, and a fan for drawing air from
said ducts and forcing it into said air
header.

1,832,919. REFRIGERATING APPARATUS.
James F. Taylor, Dayton, Ohio, assignor to
Frigidaire Corp., Dayton, Ohio, a Corpora-
tion of Delaware. Filed Jan. 31, 1929. Serial
No. 336,433. 7 Claims. (Cl. 220-9.)

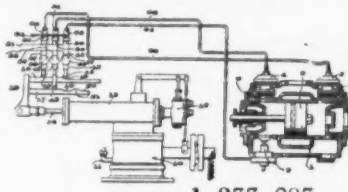
1. A refrigerator cabinet comprising a food
compartment lining having a door opening,
insulation around said lining, an outer cas-
ing around said insulation, said casing in-
cluding at least one sheet panel with a right
angled bend, and a metal strip within said
bend secured to said panel.

1,833,034. CAR COOLING APPARATUS.
Donald Parker, Fresno, Calif. Filed Dec.
23, 1929. Serial No. 415,967. 8 Claims. (Cl.
62-24.)

1. An apparatus for circulating air from
the refrigerating chamber of a refrigerator
car, through the car, and returning it to
the chamber, comprising a flexible horizon-
tally disposed member for positioning trans-
versely of the car to divide the car into

upper and lower chambers extending from
the refrigerating chamber wall toward the
car center, each of said chambers communi-
cating with an independent opening into
the refrigerating chamber, a sectional strut
secured to and extending transversely across
the flexible member and adapted at its ends
for detachably engaging the car side walls
and affording a relatively rigid structure
when in operative position for retaining the
flexible member in position transversely of
the car, portable means for creating an air
circulation from one chamber to the other
and through the refrigerating chamber, said
means adapted for movement progressively
from one end of the car toward its center,
means connected with said sectional strut
and extending toward the car center for
operation to release the strut from engage-
ment with the car side walls and afford a
means for drawing the strut and flexible
member toward the center of the car, and
a secondary flexible member vertically dis-
posed transversely of the car adapted to
separate said car end chambers from the
remainder of the car.

1,833,093. COMPRESSOR UNLOADING
DEVICE. Michael Riesner, Cincinnati, Ohio,
assignor to Worthington Pump and Ma-
chine Corp., New York, N. Y., a Corpora-
tion of Virginia. Filed Sept. 29, 1930. Serial
No. 484,965. 11 Claims. (Cl. 230-21.)



1,833,093

1. The combination with a variable volume
air or gas compressor, of pressure operated
unloading devices for loading and unloading
the compressor, distributor valves for con-
trolling admission of pressure fluid to said
unloading devices, a solenoid connected to
each of said distributor valves for operating
them, switches for controlling energizing of
said solenoids and a bar having an undulat-
ing surface and moved upon variances in
pressure of fluid compressed for operating
said switches.

1,833,129. ICE MAKING APPARATUS.
Joseph B. Rochelle, New Orleans, La., as-
signor to Roroth Refrigerating Machine
Co., Inc., New Orleans, La. Filed July 11,
1930. Serial No. 467,307. 2 Claims. (Cl. 62
-160.)

1,833,300. REFRIGERATOR CABINET.
Jacob G. Peck, Portland, Ore., and Howard
E. Blood, Detroit, Mich. Filed Jan. 5, 1929.
Serial No. 330,520. 15 Claims. (Cl. 220-9.)

9. A refrigerator cabinet comprising a
body having a chamber opening through the
top, a band of heat insulating material set

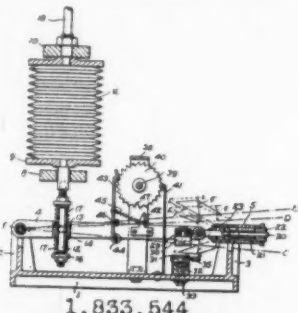
within the entrance of said chamber, a
metal top plate for said body extending over
said band, a raised strip carried by said
band and located between said top plate
and the entrance of said chamber means
for securing said strip in place.

13. A cover for refrigerator cabinets com-
prising a molded frame, a flange plate an-
chored in said frame and overlying the outer
top edge thereof, a plate of metal overlying
said frame and flange plate and having its
edges bent over the flange of said flange
plate, a metal plate overlying said frame
and secured thereto, and a heat insulating
filler in said frame between said metal
plates.

15. In refrigerator cabinets of the type
employing cooling coils, a box-like body
formed of a skeleton of angle irons covered
with metal plates and enclosing a chamber,
heat insulation separating said chamber
from the walls of the box, said box-like body
including a cross-beam with saddles, metal
connecting plates embedded in heat insula-
tion material located within said saddles,
said plates being apertured to permit pas-
sage of said cooling coil ends, all being ar-
ranged substantially as shown and described.

1,833,333. REGULATOR AND THE LIKE.
Alfred E. Stacey, Jr., Essex Falls, N. J., as-
signor to Carrier Engineering Corp., New-
ark, N. J. Filed April 14, 1928. Serial No.
270,142. 5 Claims. (Cl. 297-1.)

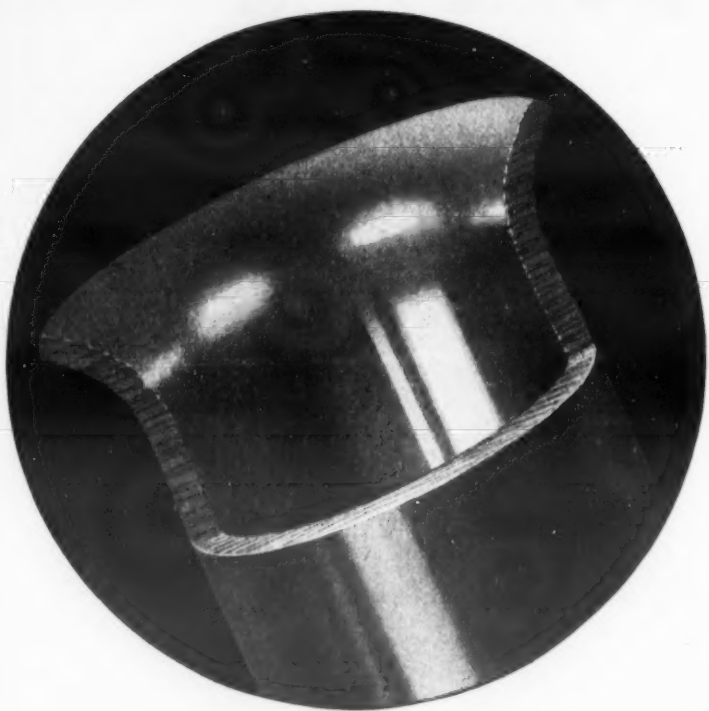
2. In a regulator or the like, the combina-
tion of a sensitive element adapted to ex-
pand and contract, a movable controlling
arm mounted to swing about a fulcrum
point, means cooperating with said control-
ling arm for effecting regulation, said sen-
sitive element being connected to said con-
trolling arm near said fulcrum point for
moving said arm, an adjusting device by
which the point of connection between said
sensitive element and the controlling arm
is shifted for changing the ratio between
the movements of the sensitive element and
the controlling arm, a lever to which said
sensitive element is operatively connected,
and means for adjusting said lever.



1,833,544

1,833,544. DEFROSTING MECHANISM.
Lars H. Vold, Butler, Pa. Filed May 10,
(Continued on Page 7, Column 1)

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copper tube

not a crack, a flaw, or weak spot. Work it any way—swedge, flare,
bend—it is perfect and stays that way. For refrigerants, water, air,
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EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

Field of Mechanical Refrigeration

(Continued from Page 6, Column 5)

1928. Serial No. 276,534. 3 Claims. (Cl. 200-83.)

1. A switch mechanism for a refrigerating system comprising a switch lever, power means connected to said switch lever responsive to fluid pressure, and energy storing means also connected to said lever, a ratchet wheel, the teeth of which constitute an abutment for the switch lever, said ratchet wheel being rotated by the movement of the switch lever whereby a new abutment is provided for said lever, for each operating cycle of the switch.

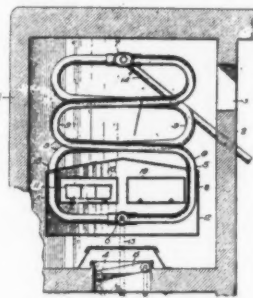
1,833,633. REFRIGERATOR. Walter Light Bodman, New York, N. Y. Filed Nov. 4, 1926. Serial No. 146,253. 13 Claims. (Cl. 220-9.)

5. A container comprising a top, bottom, and sides, each of said sides consisting of an inner and outer wall of sheet material, and separately formed reinforcing members between the walls, said members being closely arranged and substantially filling the space between the walls.

1,833,698. REFRIGERATING APPARATUS. Robert S. Wheaton, Milwaukee, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis., a Corporation of Wisconsin. Filed July 1, 1929. Serial No. 375,120. 8 Claims. (Cl. 62-126.)

1. A refrigerating apparatus, comprising a refrigerant liquid inlet header, a refrigerant vapor outlet header, a cooling coil connected to the headers and consisting of a pair of approximately horizontally extending spaced superimposed tubes having closed ends, a vertically extending short tube connected to the upper portion of the lower tube and extending into the lower portion of the upper tube and terminating adjacent the upper inner wall of said upper tube, means for supplying a liquid refrigerant to the inlet header to maintain the tubes substantially filled with the refrigerant, and means below the plane of the upper ends of the short tubes for permitting a limited amount of the refrigerant to flow into the lower tube.

1,833,846. AIR COOLING AND WATER FREEZING EVAPORATOR FOR MECHANICAL REFRIGERATING APPARATUS. Alfred W. Mellows, Milwaukee, Wis., assignor of one-half to Edwin B. H. Tower, Jr., Milwaukee, Wis. Filed Feb. 28, 1921. Serial No. 448,412. Renewed June 20, 1927. 37 Claims. (Cl. 62-95.)



1,833,846

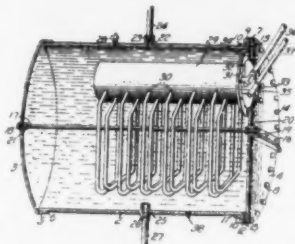
2. An air cooling and water freezing mechanical refrigerating evaporator, comprising refrigerant containing means surrounding a water freezing compartment and exposed to direct contact with the ambient air outside said water freezing compartment, and means to deliver vaporizable refrigerant to opposite sides of the aforesaid means in multiple.

1,833,847. HEAT TRANSFER. Thomas Midgley, Jr., Worthington, Albert L. Henne, Columbus, and Robert M. McNary, Dayton, Ohio, assignors to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Feb. 8, 1930. Serial No. 426,974. 24 Claims. (Cl. 62-178.)

7. The process of refrigeration which comprises condensing a fluoro halo derivative of an aliphatic hydro-carbon and then evaporating the said derivative in the vicinity of a body to be cooled.

1,833,885. WATER COOLER. Howard K. Pinkerton and Freeman L. Rhyndress, Kansas City, Mo.; said Pinkerton assignor to W. H. Frazer, Jr., Kansas City, Mo. Filed Nov. 22, 1926. Serial No. 150,061. 3 Claims. (Cl. 62-141.)

1. In a water cooler, a horizontally elongated water tank having a central top inlet and a central bottom outlet, a removable cover closing one end of the tank having an

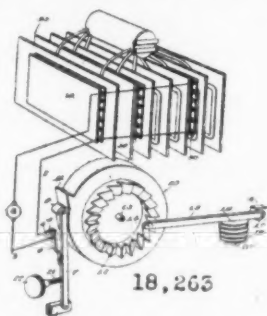


1,833,885

opening adjacent the upper edge thereof, a cylindrical refrigeration manifold within the tank having a flange for attaching the manifold to the cover concentrically of said opening for support adjacent the inlet, and cooling coils extending from the manifold toward the outlet directly in the path of water flowing from the inlet to the outlet, said opening providing for admission of connections through the removable cover to the manifold and for access to the interior of the manifold.

REISSUES

18,263. AUTOMATIC REFRIGERATING SYSTEM. William B. Day, Lexington, Ky., assignor, by direct and mesne assignments, to John S. McCarthy, Weehawken, N. J. Original No. 1,742,062, dated Dec. 31, 1929. Serial No. 240,256, filed Dec. 15, 1927. Application for reissue filed March 9, 1931. Serial No. 521,320. 27 Claims. (Cl. 62-115.)



18,263

1. The combination with a refrigerating coil, of an electric heating coil arranged in close proximity thereto, and automatically operated means for energizing said heating coil at intervals whereby the refrigerating coil is freed from snow and ice.

ISSUED DECEMBER 1

1,833,892. REFRIGERATING APPARATUS. Stanley De Waal, San Antonio, Tex., assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed May 28, 1930. Serial No. 456,616. 6 Claims. (Cl. 137-104.)

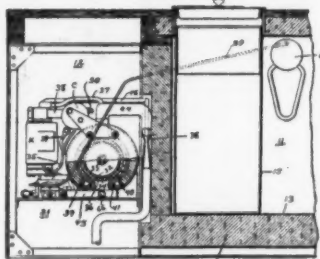
1. In an evaporator for refrigerating apparatus, the combination with a valve, of a float for actuating said valve, and means for yieldably maintaining said float in normal operating position.

1,833,901. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed July 1, 1929. Serial No. 375,129. 3 Claims. (Cl. 62-119.5.)

1. Refrigerating apparatus comprising a pair of intermittently operated absorption machines, each machine including a generator-absorber and a condenser, an evaporator common to said machines, means for intermittently heating and cooling said generator-absorbers so that when one generator-absorber is being heated the other generator-absorber is being cooled, and means for maintaining the pressure within the generator-absorber being cooled substantially equal to the pressure within the generator-absorber being heated, comprising an inert gas circulating through said evaporator and through the generator-absorber being cooled.

1,833,902. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Apr. 30, 1930. Serial No. 448,553. 4 Claims. (Cl. 62-118.)

1. In refrigerating apparatus including a condenser, a generator, and a fuel supply burner for heating said generator, the im-



1,833,902

proved method which comprises, heating the generator by burning a combustible fuel, cooling the condenser by circulating a cooling medium in heat exchange relation therewith, and withdrawing the exhaust gases from the vicinity of said generator by the suction action of the cooling liquid flowing away from said condenser.

1,833,922. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed May 28, 1930. Serial No. 456,735. 4 Claims. (Cl. 137-104.)

1. In an evaporator for a refrigerating apparatus, the combination with a valve, of an actuator for said valve, a float, and connecting means for yieldably maintaining said float in predetermined position with respect to said actuator during normal operation of said float.

1,833,929. REFRIGERATING APPARATUS. Samuel E. Bickle, Gloucester, N. J., assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Feb. 11, 1928. Serial No. 253,767. 4 Claims. (Cl. 62-126.)

1. A cooling unit comprising a series of similar cupped members unidirectionally nested together, each of said members being provided with an opening surrounded by

a refrigerant retaining wall, said walls being in alignment to form an accessible ice tray compartment, said compartment being surrounded by refrigerant ducts which are formed entirely by the adjacent similar members including said refrigerant retaining walls.

1,833,944. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware. Filed Dec. 22, 1927. Serial No. 241,889. 5 Claims. (Cl. 50-23.)

1. An expansion valve for a refrigerating system having an actuating member responsive to atmospheric pressure and to the pressure of expanded refrigerant, and means for transmitting atmospheric pressure to said actuating member and for preventing the condensation or frosting of atmospheric moisture on said actuating member.

(To Be Continued in Next Issue)

REFRIGERATION GASES

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STREAMLINE Coupling
Copper to Copper
Patent 1,770,852. Patent 1,776,502.
Other patents pending.

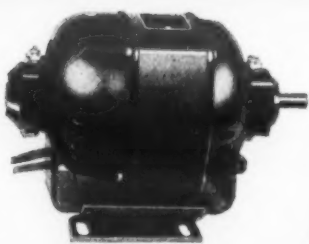


STREAMLINE Tee
Copper to Copper to Copper
Patent 1,770,852. Patent 1,776,502.
Other patents pending.



STREAMLINE Cross
Patent 1,770,852. Patent 1,776,502.
Other patents pending.

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